Beyond Filial Piety

Intergenerational Relations and Old Age Security in Contemporary China

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"There are three thousand offences against which the five punishments are directed; there is none of them greater than to be unfilial"[1]

[1] The Classic of Filial Piety [Hsiao King], Chapter 11, translated by Dawson, 2002

Summary

This dissertation assesses the state of intergenerational relations in contemporary China, and discusses its implications for old age security. Historically, the role of the Chinese state in the provision of old age security has been minimal, and caring for older people is primarily seen as a family responsibility. The Confucian norm of *filial piety* obliges adult children to provide their parents with financial and material support as well physical care and assistance.

In recent decades, however, traditional Chinese family norms and customs have been challenged by a number of socio-economic, demographic and cultural changes. As a result there is a widespread belief –both in academic literature and in the public discourse– that filial piety and related forms of intergenerational family support are on the decline, raising concerns about the well-being of older generations.

In this study, I look at three main aspects of intergenerational relations or *family solidarity*: structural solidarity (proximity), functional solidarity (the provision of care and financial support) and associational solidarity (social contact), as well as their interrelations.

Using a nationally representative dataset of Chinese families, I argue that the observed patterns neither correspond to the traditional demands of filial piety, nor indicate a crisis of intergenerational family solidarity. Instead, they reflect families' pragmatic efforts to renegotiate and adapt their relationships in the face of a rapid structural change. The capability to adapt is not equally distributed, however, and it is often the more vulnerable groups that have comparatively weaker ties to adult children.

These findings have important implications for our understanding of family relations in China and other transition societies. They also highlight the need for targeted government intervention, particularly for the most disadvantaged segments of the older population.

CHAPTER 1

Introduction

1.1 Setting the Stage: Tradition and Change in Chinese Families

The first part of this introductory chapter provides some historical and cultural background on family relations in China[2]. In particular, it describes the *traditional Chinese family model* and the ways in which it has been challenged by China's socio-economic transformation.

FILIAL PIETY AND THE TRADITIONAL CHINESE FAMILY MODEL

In China, and in East Asia more generally, taking care of elders is historically seen as a family responsibility. The ancient norm of filial piety assigns adult children the moral obligation to ensure their parents' material, social and psychological well-being. The concept of filial piety is strongly associated with the doctrine of Confucianism, which describes a moral order of society based on strictly hierarchical relations between generations. According to Whyte "the emphasis on subordination of the young to the welfare of their parents became elaborated to an unusual degree" in ancient China (2003, p. 5). Hashimoto & Ikels define filial piety as "an attitude of obedience, devotion and care towards one's parents and elder family members" (2005, p. 437). It is thus clear that filial piety implies more than merely providing material support to parents. Confucius himself once rhetorically asked

> "But dogs and horses likewise are able to do something in the way of support; without reverence, what is there to distinguish the one support from the other?" (Analects, Book 2-7; translated by Dawson, 2002).

[2] When referring to "China" hereafter, I explicitly exclude Taiwan and the Special Administrative Regions Hong Kong and Macau.

The importance of filial piety in traditional Chinese society can hardly be overemphasized. Chinese children learn from an early age that to honour one's parents and to provide and care for them in old age are the most important virtues. A core element of primary school curricula is an ancient book called "The 24 Paragons of Filial Piety", which recounts extreme cases of filial piety with telling titles such as "Entering Servitude To Pay For Father's Funeral", "Wrestling With A Tiger To Save His Father" and "Burying His Son To Save His Mother"[3]. Importantly, filial piety is a *norm of obligation*, which means that support should be provided unconditionally and without expecting anything in return. Moreover, the practice of filial piety extends beyond the parents' lifetime:

> "The superior man, while his parents are alive, reverently nourishes them; and, when they are dead, reverently sacrifices to them. His thought to the end of his life is how not to disgrace them" (The Book of Rites, Book 2-5, translated by Dawson, 2002)

Filial piety and related Confucian values informed a distinctive family structure that is often referred to as the *traditional Chinese family model*. Traditional Chinese families are often described as patrilocal, patrilineal and patriarchal (Whyte, 2003; Xie, 2013). Parents would typically share a household with one or more sons and their families, and older males remained the head of household until their death. Hierarchical relations existed not only between generations, but also between the sexes (Greenhalgh, 1985). In China's patrilineal kinship system, sons are permanent members of their native families, while daughters 'belong' to their husbands' family after marriage and are expected to assist their husband in fulfilling his filial duties. In practice, this created a gendered division of labour in the provision of parental support (Zhan & Montgomery, 2003). While the provision of physical care and household assistance is considered the responsibility of unmarried daughters and daughters-in-law, sons are expected to provide housing and material support, particularly when parents are no longer economically active. The importance of sons as a provider of

[3] Translation by Ershisi Xiao, derived from http://www.ruf.rice.edu/~asia/24ParagonsFilialPiety.html

security in later life and as heir to the family line has contributed to a strong preference for male children, which persists until today.

CHINA'S GREAT TRANSFORMATION AND CHALLENGES TO THE TRADITIONAL MODEL

Although the family model described before may not always have been adhered to in practice, it set a behavioural *ideal* that has guided Chinese family life for more than two millennia, and which is still frequently used to explain the particularities of intergenerational relations in the Chinese context (Ikels, 2006; Whyte, 2003). However, the key tenets of the traditional Chinese family model have been challenged by the unprecedented changes that affected in Chinese society in recent decades. The following provides a brief and selective overview of socio-economic, demographic and cultural trends that may have implications for intergenerational relations and old age security. For a more extensive overview, see Cai, et al. (2012), Sung (2000), Whyte (2003), Ikels (2004, 2006) or Chu & Yu (2010).

Socio-economic challenges

The first major challenge to the traditional Chinese family model occurred with the Communist Revolution of 1949. Under communism, a number of traditional family practices, such as arranged marriages, were forbidden or discouraged, and Confucianism was generally held in low regard. Moreover, the Communist Party actively promoted gender equality and women's labour force participation. It is generally believed, however, that most patriarchal customs, including filial piety, remained largely intact (Whyte, 2003). Notably, the Communist Party did not challenge the notion that taking care of elders is the responsibility of the family, and even enshrined filial responsibility into law (Ikels, 2006; H. Zhang, 2005).

The market-based reforms that started in 1978 have arguably had a more profound impact on Chinese families. Under the *household responsibility system* collective farming was abandoned and farmland was redistributed from the People's Communes to individual households. At the same time, private entrepreneurship was encouraged in urban areas. Although highly successful in terms of stimulating economic growth

and reducing absolute poverty rates, China's economic reforms were accompanied by a massive increase in socio-economic inequality, particularly between urban and rural areas. Urban areas have been the primary beneficiaries of China's economic boom, enjoying higher living standards, lower poverty rates and better public services (Xie & Zhou, 2014).

Rural poverty levels remain high, however, particularly in the isolated inland regions (Cai et al., 2012, p. 30). It is therefore not surprising that many rural Chinese seek better opportunities by moving to the cities. Under the *hukou* system of household registration, which was introduced in 1958, internal migration used to be highly restricted. Since the 1980s migration laws have been less strictly enforced, however, leading to a massive surge in rural-to-urban migration. The total number of internal migrants was recently estimated at 236 million (National Bureau of Statistics of China, 2013). Migration is often portrayed as a risk for older adults, particularly those in rural areas who are 'left-behind' by their geographically mobile children (Toyota, Yeoh, & Nguyen, 2007). The large-scale outmigration of younger age cohorts has been accompanied by a rapid decline in coresidence rates, particularly in rural areas. Most older Chinese now live alone or with a spouse only, a situation that is referred to as 'empty nest' in the Chinese public discourse (Cai et al., 2012, p. 48). There is some discussion about whether the trend towards independent households reflects a decline in intergenerational solidarity or merely a 'wealth effect' in which preferences for privacy and independence increase with income (Wang, 2004; H. Zhang, 2004; Z. Zhang, Gu, & Luo, 2014).

Demographic challenges

In addition to its socio-economic transformation, China is facing a demographic transition at an unprecedented scale. With 113 million people aged 65 and above, China already has the largest number of older people in the world (National Bureau of Statistics of China, 2015). Yet, as Figure 1 shows, population ageing in China is still at a relatively early stage, and the older population will continue to grow rapidly in the upcoming decades.

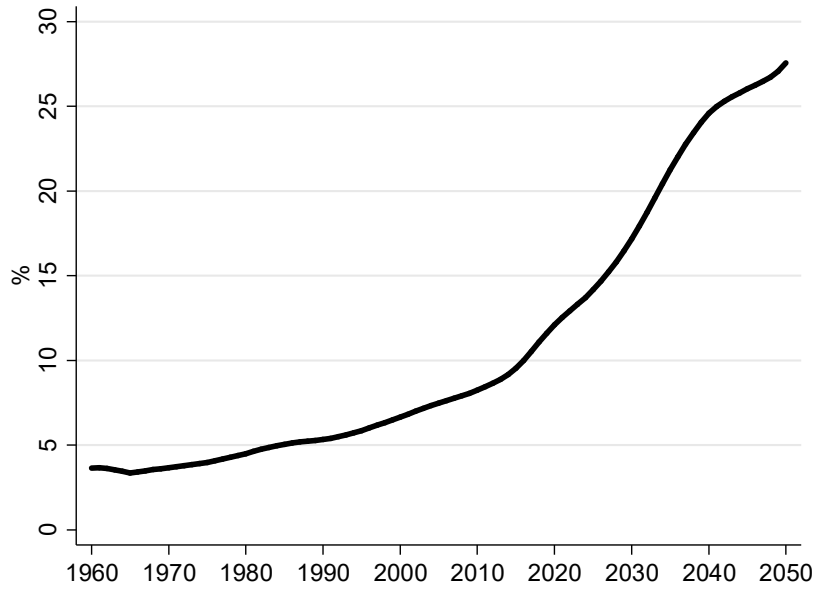

Figure 1. Population aged 65 and above as a percentage of the total population

Source: World Bank staff estimates based on age distributions of United Nations Population Division's World Population Prospects (available at www.databank.worldbank.org).

The government's fertility reduction policy, introduced in 1979, has accelerated the population ageing process, although its exact contribution remains subject to debate (Ding & Hesketh, 2006). Although commonly known as the *One Child Policy*, the fertility reduction policy was implemented differentially between rural and urban areas as well as between ethnic Han Chinese and various minority groups. For example, rural residents were typically allowed to have a second child if the first child was a daughter. Figure 2 shows the decline in fertility across age cohorts for rural and urban residents aged 45 and above, who are the focus of this study. It can be seen that older cohorts (aged 65 and above) mostly have three or more children, both in rural and urban areas. Single-child families are most common in urban areas and among middle-aged parent cohorts (aged 45-55). Although lower fertility already has important implications for intergenerational relations and old age security, its impact will be most pronounced in the upcoming decades, as the parent cohorts most affected by the decline reach retirement age.

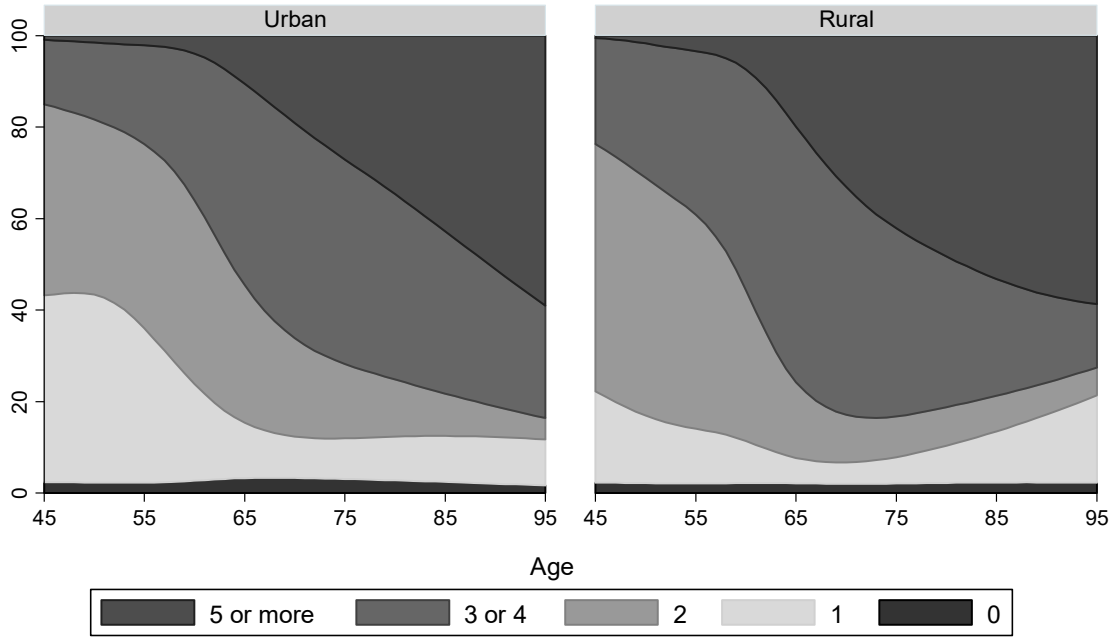

Figure 2. Number of living children per respondent, over age

Stacked plots using restricted cubic spline smoothing of proportions. Source: China Health and Retirement Longitudinal Study (CHARLS), Wave 1 (2010-11), N=17,682.

Cultural challenges

Finally, the moral foundations of the Chinese family model have been affected directly by a shift in values and customs. Although China was relatively shielded from foreign cultural influences during the early Communist period, the 1978 market transformation also opened the door to Western values and ideas (Whyte, 2003). As a result, a gradual individualization of Chinese society can be observed (Steele & Lynch, 2013). According to Yan, contemporary Chinese society is characterized by the neoliberal ideals of "a fluid labour market, flexible employment, increasing risks, a culture of intimacy and self-expression, and a greater emphasis on individual responsibility and self-reliance", although without the political freedoms and civil rights typically observed in the West (2010, p. 510). There is a widespread concern amongst older Chinese that individualization and related trends have eroded traditional norms of filial obligation (Croll, 2006).

Patriarchal family norms and practices have been challenged by women's economic empowerment, which has increased the economic value of daughters and affected the

intra-household division of labour (Miller, 2004; Whyte, 2000). Women are also increasingly likely to leave the parental household before marriage, for example to pursue higher education or wage labour (Chiang, Hannum, & Kao, 2015; Hannum, 2005).

A further sign of cultural change is the emergence of new family practices and living arrangements, some of are at odds with the traditional Chinese family model. An example is early household division, in which older fathers relinquish their position as head of the extended family household and parental assets, such as land, are divided amongst sons during the parents' lifetime (Wang, 2004). Early household division reflects a shift in the intergenerational power balance and resource flow in favour of the younger generation. According to Ikels

> "whereas in the past members of the older generational envisioned being 'served' by the young, they now find that the tables have been turned. Today the old 'serve' their daughters-in-law who are employed outside the home by providing assistance with childcare, marketing, cooking and cleaning" (2004, p. 6).

This shifting orientation in intergenerational relationships is part of what Yan described as *descending familialism*, in which

> "family resources of all sorts flow downward, and, most important, the focus of the existential meanings of life has shifted from the ancestors to the grandchildren" (2016, p. 118).

Another indicator of the changing nature of intergenerational norms is the widespread use of Family Support Agreements (FSAs). An FSA is a voluntary contract in which children (typically sons) divide the responsibilities with respect to supporting aged parents, often in highly detailed terms. Although this legalisation of family relations appears antithetical to the principle of filial piety, an estimated 13 million rural families had signed such contracts by 2006 (Chou, 2011).

THE PUBLIC SUPPORT SYSTEM

Traditionally, the role of the Chinese state in the provision of old age security has been limited, and public officials have stressed the responsibility of adult children to take care of their parents, in line with the Confucian doctrine of filial piety (Whyte, 2003). Supporting older family members is not only a moral but also a legal responsibility. The recently revised Elderly Rights Law further strengthened parents' right to request support from their adult children (Hatton, 2013). However, concerns about the sustainability of the traditional Chinese family model in a context of rapid population ageing have increased pressure on the government to improve public support for the aged.

Historically there has been a dual system of social protection and public services in China, in line with the hukou system. Urban residents are generally entitled to better services and benefits, including schools, pensions and health insurance (Liang, 2016). Moreover, most of the long term care facilities that serve older adults with severe physical needs are located in urban areas (Glass, Gao, & Luo, 2013).

In rural areas, where the majority of the older population lives, social protection is much more limited. During the collectivist period a minimal degree of social security was provided by collective work units, but most of these benefits were dismantled as part of the market transition process. Since the late 1990s, however, there have been some indications of increased public commitment to social protection, as part of the Communist Party's *harmonious society* agenda (Ringen & Ngok, 2013). Notably, the government introduced the comprehensive New Cooperative Medical Insurance Scheme (NCMS) in 2008 and the New Rural Pension Programme (NRPP) in 2009. The NRPP is a voluntary pension scheme for the rural population that involves government subsidies as well as individually funded accounts (Cai et al., 2012). By the end of 2011, the NRPP covered 326 million people (237 million contributors and 87 million recipients) (Quan, 2012, p. 14). The benefits provided by the NRPP are rather low, however, constituting only 14% of the average rural income (HelpAge International, 2013, p. 13). In addition to the NCMS and the NRPP, which serve the general rural population, there are two social assistance programmes (*wubao* and *dibao*) that provide benefits to very poor households. It must be noted, however, that the

management of all these schemes is largely decentralized to local government units, many of which are characterized by inefficiency, limited fiscal resources and / or a high degree of 'leakage' (I. Peng & Wong, 2010; Xiang, 2007). The result is a fragmented implementation landscape, with regional variation in benefit levels, coverage rates and implementation timelines.

The lack of public provision implies that is still "a familial contract and familial exclusion rather than a social contract and social exclusion that is most pertinent for individual well-being" (Croll, 2006, p. 478), particularly in rural China. As an illustration, Giles et al. found that 54% of rural Chinese aged 60 and above relied on family members as their primary source of subsistence, a figure that increased to 91% for those aged 85 and above. In contrast, only 6% mentioned pensions or government support as their main source of income (2010, p. 188).

IMPLICATIONS FOR INTERGENERATIONAL RELATIONS AND OLD AGE SECURITY

The previous sections have outlined the traditional Chinese family model, in which strong filial norms provided a degree of informal security to older parents, and the ways in which it has been challenged by recent social, economic, demographic and cultural changes. Given the magnitude of these challenges and the persistent lack of public support, it is not surprising that concerns about the sustainability of informal family support and the well-being of the older population are widespread. These concerns are summarized in the commonly heard sayings "China is growing old before it is growing rich" and the "China is facing a 4-2-1 problem" (one child supporting two parents and four grandparents).

The importance of these issues in the Chinese and international public discourse can hardly be underestimated. Pessimistic views are regularly fuelled by alarming headlines such as "Struggling Elderly a Challenge for China" [Xinhua, 25.10.2012] "China's transformation frays traditional family ties, hurting many seniors" [The Washington Post, 13.09.2013], "Aging Chinese Face a Bleak Picture" [The Wall Street Journal, 31.05.2013] and "Migration adds to elderly-care woes" [The China Daily,

22.19.2015]. Meanwhile, policymakers worry about the implications of the 'ageing crisis' for economic growth, political legitimacy and China's ascent on the world stage.

Against this background, I seek to assess the state of intergenerational relations or *family solidarity* in contemporary China. Is the traditional Chinese family model still an adequate description of Chinese family relations? How have family relations adapted to structural change? Which groups have been the most affected? These are some of the questions this dissertation seeks to address.

In the remainder of this introductory chapter, I will provide an overview of the analytical concepts and theoretical perspectives that are commonly used in the study of intergenerational relations, followed by an evaluation of the empirical literature. Finally, I present my own research design and introduce the four empirical studies.

1.2 Theories and Concepts in the Study of Intergenerational Relations

In the last few decades China has transformed from a low-income, primarily agricultural society into a middle-income industrial society. The impact of economic modernisation on (extended) family ties is one of the classical debates in family sociology. This chapter provides an overview of the main analytical concepts and theoretical perspectives that have been developed over the years, and discusses their relevance to the case of China.

MODERNISATION AND AGEING THEORY

In the 1960's and 70's, various scholars working in the structural-functionalist tradition developed the *modernisation and ageing theory*, which links economic modernisation to the role and status of older people in society (see especially Burgess (1960), Goode (1963) and Cowgill & Holmes (1974)). Modernisation and ageing theory closely follows the *logic of industrialism*, which assumed that the modernisation process limits the (extended) family's social, economic and educational functions and reduces it to a reproductive and cultural role (see e.g. Kerr, Dunlop, Harbison, & Myers, 1960).

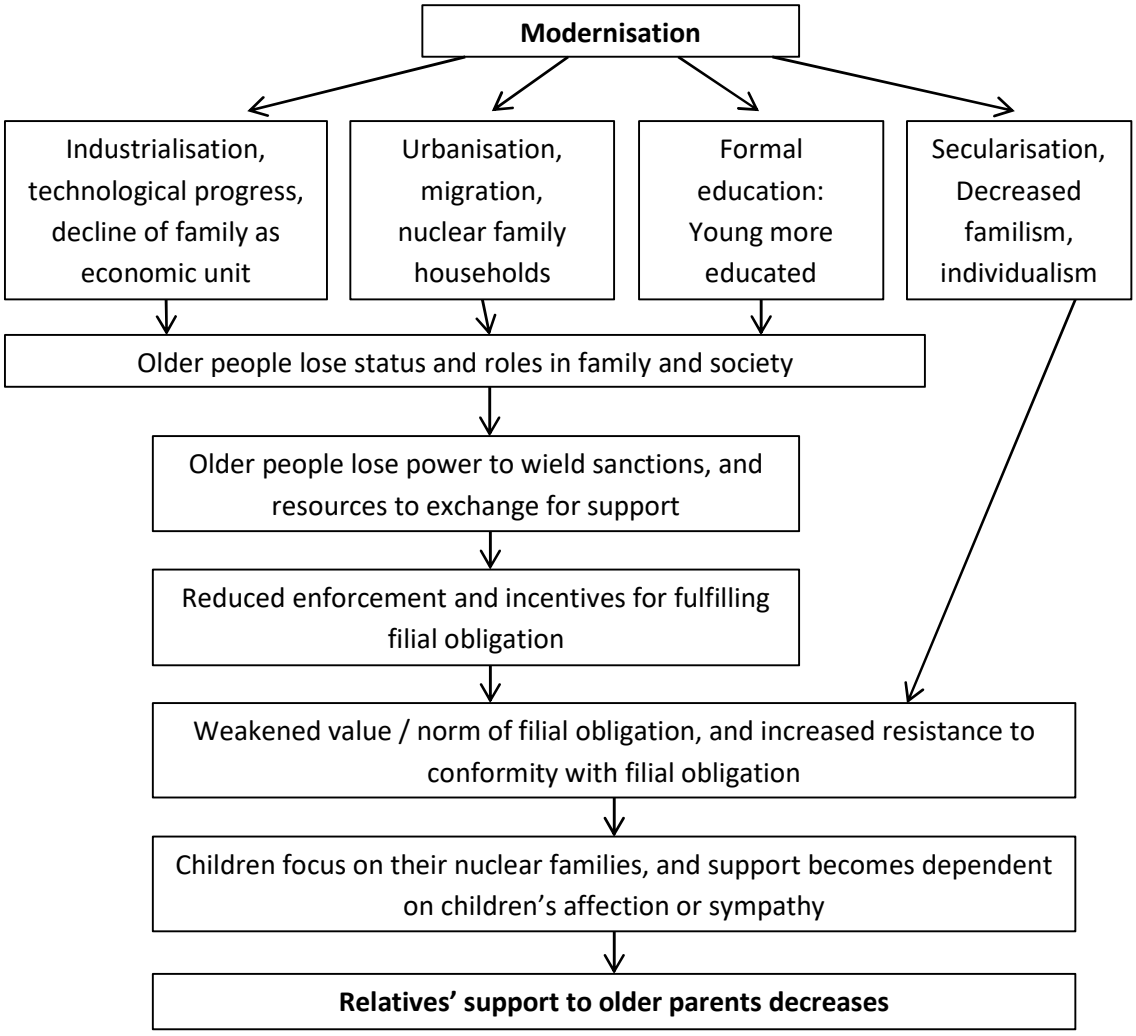

Figure 3. Modernisation and Ageing Theory

Adapted from Aboderin (2004), p. 39

Modernization and ageing theory contrasts the strong family and community ties in 'traditional' societies, in which older people are assumed to hold positions of high power and regard, to individualistic 'modern' societies, in which they are socially, economically and geographically marginalized. Modernisation thus leads to a 'status reversal' between older and younger generations, through a number of interrelated mechanisms (Figure 3, see also Aboderin, 2004). First, technological progress and the advent of mass education weakens the role of the elderly as a bearer of knowledge. Second, urbanization and the 'nuclearization' of families at the expense of traditional extended households creates a physical separation between generations. A third mechanism relates to normative change. In modernisation and ageing theory, it is assumed that family support to the elderly is upheld by social norms, coupled with

social sanctions for those who do not adhere to them. Modernisation weakens those norms by promoting individualistic attitudes and eroding adherence to traditional beliefs, eventually resulting in a reduction of family support to older parents.

Because of its simplicity, compelling argumentation and (apparent) empirical basis in the Western historical experience, modernisation and ageing theory was highly influential in the second half of the 20th century. Almost from the outset, however, it has been criticized for relying on unrealistic assumptions and a deterministic view of socio-economic development (see for example Shanas, 1979). In particular, the assumption that the elderly generally occupied a revered position in 'traditional' Western society is not supported by historical evidence (Aboderin, 2004; Ikels, 2006; Jones-Finer, 2000). Moreover, the characterization of older people as dependent recipients of family support (in traditional societies) or state support (in modern societies) is an unjustified generalization (Barrientos, Gorman, & Heslop, 2003; Shanas, 1979). The frail or incapacitated elderly typically constitute only a fraction of the older population (Lloyd-Sherlock, 2000, p. 2157). In both traditional and modern societies, many older people are economically active and provide various types of support to younger generations, such as childcare.

A second line of criticism relates to the mechanisms that are assumed to relegate the elderly to a dependent, degraded status in modern society. It was observed for example that in most western societies the shift from extended to nuclear living arrangements occurred well before the industrial revolution, and can therefore not be seen as a consequence of modernisation (Hermalin, 2002b, p. 111). In other parts of the world a variety of kinship structures and living arrangements can be observed, and there is little indication that they converge to a uniform model centred on the nuclear family. Urbanisation and migration do not necessarily have a negative effect on family relations or support to the elderly. Many studies have demonstrated that migrants maintain strong ties to their rural place of origin and support their remaining family members with transfers of money and goods (Fan, 2008; Giles & Mu, 2007).

Finally, it has been argued that he predicted decline of family support for older family members has not come about. Even advanced welfare states, the family is still the

main source of support for most older adults (Bengtson & Putney, 2000; Lowenstein, 2005).

In spite of these criticism, however, the main arguments and causal mechanisms implied by modernisation and ageing theory are still present in the public and academic discourse on economic transformation and family relations, particularly when non-Western countries such as China are concerned (Aboderin, 2004). As we have seen in the previous section, the modernization process has been particularly rapid and profound in China, and there are widespread concerns about an imminent ageing crisis and a breakdown of the intergenerational support system, similar to what is predicted by modernization and ageing theory.

THE MODIFIED EXTENDED FAMILY / CORPORATE GROUP MODEL

Scholars critical of modernisation and ageing theory have developed a number of alternative perspectives. Primary among them is Litwak's *modified extended family model* (1960). Modified extended families are networks of nuclear households connected by strong family ties and supportive relationships. Technological development plays an important role in enabling this family model, as it makes communication less dependent on physical proximity. In modified extended families, intergenerational support is provided when family members need it, for example during periods of illness or around major life course events (Litwak & Kulis, 1987). Riley (1983) called this contingent support network the *latent kin matrix:* "a web of continually shifting linkages that provide the potential for activating and intensifying close kin relationships" (p. 441).

While the modified extended family concept has mainly been discussed in the Western context thus far, it may be particularly applicable to Chinese families, many of which have moved from multigenerational to nuclear living arrangements in recent decades. The modified extended family model is similar to the corporate group model of family relations, which is frequently applied to Chinese families (Lee, Parish, & Willis, 1994; Silverstein, Cong, & Li, 2006; Sun, 2002). Sun (2002) suggests that this model "treats family as a closely related network that cares for the well-being of all family members

and seeks optimal distribution of resources within the family" (p. 339). As in the modified extended family model, parents are able to rely on adult children at a time of need, for example when they develop physical impairments. This modified extended family / corporate group perspective thus suggests that intergenerational family support may not manifest itself until there is an explicit need. For example, it has been observed that Chinese migrants return to live with their parents when they become widowed or in need of care (Korinek, Zimmer, & Gu, 2011; Zimmer & Korinek, 2010). From the child's perspective, the corporate group model suggests that intergenerational transfers will be commensurate with their capacities and resources relative to other family members, such as siblings. Any analysis of intergenerational support in China should therefore take into account the resources and composition of the wider family network.

FAMILIES AS NETWORKS OF RECIPROCITY

In addition to norms of obligation and relative need, family sociologists generally assume that reciprocity plays an important role in intergenerational support. The concept of reciprocity, which is derived from anthropology, should not be confused with a purely self-interested exchange relationship; it rather constitutes "an intermediate, hybrid motivation between altruism and exchange" (Arrondel & Masson, 2006, p. 1022). In Arrondel & Mason's definition, reciprocity implies

> "some chain of gifts and return-gifts encapsulated in a full system of expectations and sanctions (and 'internal' obligations), where affectivity, 'emotions', a sense of justice, etc. play important roles, and where failure to comply with the rules may place oneself in an intolerable position, especially in a family context: 'opting out' may not always be an acceptable option, and group survival is often a crucial issue" (2006, p. 1022).

Reciprocity thus differs from market exchange in that it is based on a shared sense of fairness, which is maintained by collective norms and values and enforced through social pressure (see also Hermalin, 2002b). Moreover, in family-based 'webs of reciprocity' mutual affection enables long-term and asymmetric exchanges that would not be possible in the market place (Künemund & Rein, 1999). Intergenerational

reciprocity can take different forms (money and goods as well as emotional support and care) and does not always need to be reciprocated in the same 'currency'. In the study of intergenerational transfers, a distinction is typically made between short and long term reciprocity. In the short term variant, older people provide various benefits in return for the support they receive from their family members. This may include financial transfers but also services such as child care (Hermalin, 2002b). In the long-term variant, adult children care for their parents in exchange for the support they received in childhood and young adulthood. This type of reciprocity generally takes place in intimate (family) relationships only, and does not need to be symmetrical (Künemund & Rein, 1999). In addition, a distinction can be made between direct and indirect reciprocity. In indirect reciprocity, gifts can be reciprocated to a third party. For example, children could 'repay' their parents for their education by investing in their own children.

The reciprocity perspective challenges the notion of older people as passive recipients of family support, and reminds us that they frequently provide valuable services to younger family members. In the Chinese context, the notion of long- and short-term reciprocity is supported by a large body of micro-level evidence, which shows a lively pattern of various types of transactions between older people and their younger kin. For example, Cong and Silverstein (2011) find that the financial transfers Chinese labour migrants make to their parents are commensurate with the amount of time and money their parents invested in them. The provision of childcare by grandparents is also particularly common in China (Chen, Liu, & Mair, 2011; Cong & Silverstein, 2012a).

INTERGENERATIONAL SOLIDARITY

The intergenerational solidarity model is currently the most widely accepted analytical framework in the study of parent-child relations in adulthood. It was developed by Bengtson & Roberts (1991), building on previous work by Bengtson & Schrader (1982), McChesney & Bengtson (1988) and others. The model conceptualizes intergenerational solidarity as a multidimensional construct with six components: associational (contact frequency), affectional (quality of the relationship), consensual

(agreement on values), functional (the quantity, type and quality of resources each generation contributes to the other), normative (shared family norms) and structural (the geographic distance between residences) (see Table 1).

Table 1: *The six components of intergenerational solidarity*

Construct	Definition
Associational solidarity	Frequency and patterns of inter action (face-to-face, telephone, mail)
Affectual solidarity	Type and degree of positive sentiments held about family members
Consensual solidarity	Degree of agreement on values, attitudes, and beliefs among family members
Functional solidarity	Degree of helping and exchanges of resources (e.g. financial, physical, emotional)
Normative solidarity	Strength of commitment to performance of familial roles and to meeting familial obligations (familism)
Structural solidarity	Opportunity structure for intergenerational relationships reflected in number, type, and geographic proximity of family member

Note: Adapted from Bengtson & Roberts, 1991, p. 857

By highlighting the interrelations between the different aspects, the solidarity concept emphasizes the need for a holistic approach to studying intergenerational relations. For example, geographic distance can serve as a barrier to frequent association and the exchange of time-intensive support. On the other hand, frequent contact and feelings of affection make functional solidarity more likely.

Although widely accepted amongst family sociologists, the solidarity paradigm has been criticised for neglecting the negative and conflictive aspects of intergenerational relations. In response, the influential *intergenerational ambivalence* concept was developed to describe "the simultaneous coexistence and opposition of harmony and conflict in intergenerational relations" (Lüscher, 2002, p. 591). In has been argued,

however, that ambivalence and solidarity are complementary rather than competing paradigms (Bengtson, Giarrusso, Mabry, & Silverstein, 2002).

Although originally developed with a view to US-American families, intergenerational solidarity is a highly flexible concept that has been applied in various contexts, including China (Guo, Chi, & Silverstein, 2012, 2013). The solidarity model suggests that the impact of social change can vary depending on the component that is observed: there is no single indicator of the strength of intergenerational ties. Similarly, the exchange of support does is not based on a singular motive, such as filial norms, but on a complex interaction between structural factors, norms, affection and association.

THE LIFE COURSE PERSPECTIVE

Rather than a theory of intergenerational relations, the life course perspective is best described as an analytical orientation that is generally accepted by most family researchers. Its impact on the study of human lives and relationships, including parent-child relationships, can hardly be underestimated (Putney & Bengtson, 2003). While a full overview life course perspective is beyond the scope of this introductory chapter, its core principles were aptly summarized by Elder, Kirkpatrick, Johnson & Crosnoe:

- The Principle of Life-Span Development: Human development and aging are lifelong processes
- The Principle of Agency: Individuals construct their own life course through the choices and actions they take within the opportunities and constraints of history and social circumstance
- The Principle of Time and Place: The life course of individuals is embedded and shaped by the historical times and places they experience over their lifetime
- The Principle of Timing: The developmental antecedents and consequences of life transitions, events, and behavioral patterns vary according to their timing in a person's life
- The Principle of Linked Lives: Lives are lived interdependently and socio-historical influences are expressed through this network of shared relationships

(2013, pp. 11–14)

The life course principles have numerous implications for the study of intergenerational relationships in the Chinese context. For instance, they suggest that the impact of structural change is likely to be heterogeneous. The changes outlined in the previous section will affect (groups of) individuals differently depending on their social and personal circumstances, preferences and life histories. The life course approach also highlights the need to differentiate between age, period and cohort effects in the study of intergenerational relations.

1.3 Literature Review

The previous section described a number of theoretical approaches to measure and explain the strength of intergenerational family ties. Neither of these perspectives are mutually exclusive, since individuals may hold different motivations at the same time, and the dominant motivation may shift over time and across the life course (Kohli & Künemund, 2003). Ultimately, their applicability in any given context remains an empirical question. China constitutes an excellent case for studying intergenerational relations in a context of rapid structural change, and a substantial body of academic literature has been devoted to the topic. A key distinction can be made between qualitative and quantitative studies: mixed methods approaches are disappointingly rare. Although it is not possible to discuss each study individually, I highlight their main findings, as well as the open questions and limitations. More detailed reviews of the relevant literature will be provided in the empirical chapters.

Qualitative literature

This category generally consists of studies of a single community or group of individuals, using ethnographic methods such as participant observation and open interviews. A good example are the works by the anthropologist Yunxiang Yan, who was sent to work in a rural village during the Cultural Revolution and returned periodically to observe changes in family relations (Yan, 2003, 2010, 2016). Other studies have looked at gender relations (Judd, 1989; Miller, 2004; Shi, 2009; W. Zhang,

2009), migration (Fan, 2003, 2009; J. Liu, 2014; Murphy, 2002) and living arrangements (Miller, 2007; Thøgersen & Anru, 2008; W. Zhang & Wang, 2010).

An excellent meta-analysis of ethnographic family research is provided by Elisabeth Croll (2006), who asks whether the 'intergenerational contract' has been eroded by modernisation and related factors. She concludes that the authority of older over younger generations has indeed weakened in the wake of China's socio-economic transformation and that most young adults no longer subscribe to the traditional interpretation of filial piety (see also Shi, 2009; Yan, 2003, 2016; H. Zhang, 2004). Instead of eroding intergenerational solidarity, however, Croll suggests that families have 'renegotiated' the traditional intergenerational contract. The renegotiated contract emphasizes reciprocity and mutual support rather than hierarchical norms of filial obligation:

> "The representation and reinterpretation of the intergenerational contract increasingly centre it upon an exchange of care, which is a shorthand term comprising practical assistance or servicing combined with a sense of nurture, appreciation and affection" (p. 483).

As part of this new intergenerational contract, parents have intensified their overall 'investment' in younger generations in three different ways:

- Increased expenditures on children, particularly for education
- The provision of support to adult children, for example in the form of child care
- Investment in daughters as well as sons

As a result, intergenerational resource flows are now "more balanced and symmetric, with both generations, simultaneously or in shortened cycles, giving and receiving care" (Croll, 2006, p. 484). The increased emphasis on emotion and reciprocity in parent-child relationships has benefited parent-daughter relations in particular (Judd, 1989; Shi, 2009; W. Zhang, 2009). The renegotiation process is not without friction, however, and conflicts and anxieties surrounding intergenerational support are a frequently recurring theme in ethnographic studies. Xu (2001) reported that many of the elders he interviewed delayed relying on their children for as long as possible, afraid of becoming a burden to their families. Zhang (2004) and Miller (2004) found

that many elders preferred to live apart from their children in order to avoid the potential conflicts and burdensome tasks involved in coresidence: "they embraced 'living alone' as a way of maintaining autonomy in the face of their diminishing authority and a shift of power to the younger generation within the household" (H. Zhang, 2004, p. 85).

Quantitative literature

Quantitative studies on intergenerational relations in China are generally concerned with the individual-level correlates of intergenerational support, focusing in particular on financial transfers and coresidence.

In studies that look at the determinants of financial transfers or *remittances*, a distinction can be made between those that take the adult child as the unit of analysis (Lee et al., 1994; L. Lei, 2013; Xie & Zhu, 2009), and those that take the parents' perspective (Y. Du, Park, & Wang, 2005; Giles et al., 2010). These studies generally show that parents continue to receive substantial assistance from children, even if they live in separate households. Particularly for rural parents, remittances from migrant children are often an essential source of income. They also suggest that transfers are related to parental need (Sun, 2002) and previous support from parents (Cong & Silverstein, 2011).

The literature on coresidence typically focuses either on its determinants or on its impact on older parents' social and economic well-being. In line with the traditional Chinese family model, it was found that parents are much more likely to live with married sons than with married daughters (Ma & Wen, 2016). Silverstein, Cong & Li (2006) suggested that non-traditional living arrangements, such as living alone, increase the risk of depression and loneliness amongst older people (see also Cong & Silverstein, 2008; Korinek et al., 2011; K. Yang & Victor, 2008).

A few quantitative studies have also explored the affective and normative dimensions of intergenerational solidarity, by asking parents and children about the quality of their relationship and support for filial norms. They generally report that agreement with filial norms among both older and younger generations remains strong (Deutsch, 2006; Fuligni & Zhang, 2004; J. P. Lin & Yi, 2011; Whyte, 2004), although such statements are

highly susceptible to social desirability bias. In contrast, Guo, Chi & Silverstein (2012) found that about 30% of the parent-child dyads in their rural sample were characterized by 'discordant' relations, which is much higher than what is typically observed in Western countries.

Limitations and research gaps

Although the abovementioned studies provide a wealth of information on intergenerational relations in China, their findings remain fragmented. Certain aspects of intergenerational solidarity, such as the frequency of contact between parents and children or the caregiving arrangements of disabled elders, have received virtually no attention, while others, such as coresidence, have been studied extensively.

Moreover, because most studies are based on interviews with a single child or parent per family, we know little about the distribution of support amongst siblings. A number of ethnographic studies suggest that daughters have taken on a larger share of intergenerational support tasks (Shi, 2009; H. Zhang, 2007; W. Zhang, 2009), but this finding has not yet been confirmed in survey-based research.

Furthermore, because many studies are based on small and geographically restricted samples, they do not allow for the identification of general trends. Although this problem is particularly pronounced in ethnographic work, even in quantitative studies external validity can be limited. For example, Merril Silverstein and his collaborators base most of their findings on a survey of older adults in a single district of Anhui province.

Finally, a problem that is shared by all social research on China is that the rapid pace of change may render even relatively recent findings obsolete. For example, Yan (2016) observed that the intergenerational conflicts he observed in the late 1990s had largely disappeared in the 2000s, and been replaced by a new phenomenon that he describes as *intergenerational intimacy*. Many of the classic works on family relations in China (e.g. Bian, Logan, & Bian, 1998; Greenhalgh, 1985; Lee et al., 1994; Parish & Whyte, 1978; Whyte, 2003, 2005) are based on data from several decades ago, and the contemporary relevance of their findings is questionable.

In summary, the literature on intergenerational relations and old age security in China shares a number of limitations:

- A narrow focus on financial transfers and coresidence, at the expense of other dimensions of intergenerational solidarity
- A lack of attention to the (gendered) distribution of support among children
- Limited interaction between qualitative (ethnographic) and quantitative (survey) research.
- A lack of nationally representative data on intergenerational support patterns
- (Partially) outdated findings

In the following section, I describe how this dissertation seeks to overcome some of these limitations.

1.4 Empirical Approach

In order to study the impact of children's and parents' characteristics on intergenerational relations, it is necessary to use the individual adult child–parent dyad as the unit of analysis (Lye, 1996). A complication that arises here, however, is that most families consist of more than one parent and more than one child, and the relations between these dyads are not independent (Konrad, Künemund, Lommerud, & Robledo, 2002; Leopold & Raab, 2013). For example, adult children tend to divide the support of parents according to their respective preferences and constraints (Silverstein, Conroy, & Gans, 2008). The number, gender and relative resources of siblings are thus important determinants of the amount of support each child provides. Ideally, one would therefore need to obtain information on each parent and each of their children.

Such multi-actor data is hard to obtain in practice, however, and was not available for China until 2013, when the first wave of the 2011-2012 China Health and Retirement Longitudinal Study (CHARLS) became available. CHARLS is a nationally representative survey of the Chinese population aged 45 and above, managed by an international research team based at Peking University. It is part of a family of surveys modelled on the U.S. Health and Retirement Study (HRS). Importantly, it contains detailed demographic information on the respondent, his or her spouse, and each of their children, even if they did not share a household at the time of the survey. Moreover, CHARLS contains highly detailed measures on social contact, economic transfers and the provision of care between parents and each of their adult children. For these and other reasons, CHARLS was excellently suited for the purpose of this project[4]. For descriptive information on that could not be derived from CHARLS, I also rely on other

[4] Each of the empirical chapters is based on (a subset of) the CHARLS Wave 1 (Baseline) dataset, updated on 13 March 2013. CHARLS has received support from Peking University, the National Natural Science Foundation of China, the Behavioral and Social Research Division of the National Institute on Aging and the World Bank. For more information, see http://charls.ccer.edu.cn/en. For more detailed information on CHARLS and the particular measures employed, please refer to the relevant empirical chapters.

statistical sources, particularly the census data provided by the National Bureau of Statistics of China (NBS).

Each of the four empirical chapters looks at one or more aspects of intergenerational solidarity: structural solidarity (proximity), functional solidarity (the provision of care and financial support) and associational solidarity (social contact). Compared to other elements of the solidarity framework, such as the degree of affection and value concordance, these indicators have the advantage that they can be easily quantified and measured in a relatively objective way, and thus lend themselves to statistical analysis. Quantitative methods are less apt at eliciting and analysing the subjective meanings, norms and attitudes surrounding intergenerational relations. This does not mean, however, that these are less important to our understanding of (changes in) parent-child relations. In interpreting my findings I therefore made ample use of qualitative sources, which mainly include ethnographic studies on Chinese families but also documentary films, newspapers, songs and classic Confucian texts. Below I provide a brief outline of the four empirical chapters and their contributions to the study of intergenerational relations and old age security in the Chinese context.

In the first chapter (*"Family Caregiving and Living Arrangements of Functionally Impaired Elders in Rural China"*) I look at the impact of declines in coresidence rates and the emergence of the 'networked' family model on informal family care, using a sample of 887 functionally impaired individuals aged 60 and above. The sample is limited to rural areas, where public care facilities are almost absent and family care is thus of crucial importance. In particular, I analysed the receipt of care by older parents in three different living arrangements: with any child or child-in-law (coresident); independent with at least one child living in the same community (networked); and without any children in either the household or the community (isolated). Multivariate logistic regression models were used to assess how they differed in their respective likelihood of not having any caregiver, receiving care from a child and receiving care from a spouse.

The second chapter (*"Daughters and Sons' Remittances in Rural China: Findings from a National Survey"*) deals with gender differences in the provision of economic support (remittances) to parents. In the traditional Chinese family model, it is primarily the

responsibility of sons to provide such support to their parents. I analysed whether such gender differences persist in contemporary rural China and how they can be explained, using a sample of 11,343 adult children and their rural parents. I employed a two-part model that takes into account both the likelihood and the level of economic support to parents. In addition to comparing overall economic support by gender, I assessed how child-level factors such as marriage, migration status and grandchild care received from parents mediate support by daughters and sons.

In the third chapter (*"Intergenerational Contact in Chinese Families: Structural and Cultural Explanations"*) I used Poisson models, including family fixed effect (FFE) models, to analyse the frequency of 1) visits and 2) other contact (phone, text message etc.) in a representative sample of 16,715 adult child-parent dyads; focusing in particular on the role of migration as well as children's gender, marital status and education level. Although the determinants of intergenerational contact have been well documented in Western countries, this was the first study to look at this subject in China. A particularly novel aspect of this study is its attention to the role of the *mobile revolution* in intergenerational relations.

The fourth chapter (*"The Effect of Education on Spatial Proximity and Contact with Parents in China: A Within-Family Analysis"*) analyses how children's education level affects structural and associational solidarity. China has seen an unprecedented expansion of education in recent decades, resulting in large education gaps between children and their parents. Previous research suggests that this may lead to increased distance and reduced contact between generations, with potentially negative impacts on older parents' well-being. In order to control for possible confounders on the family- and environmental level, I employ a family-fixed effects approach that exploits differences in education between adult siblings.

Although the four chapters employ different methodological strategies and focus on different outcome variables, they jointly contribute to our understanding of intergenerational relations and old age security in China. On the one hand, they ask how the traditional Chinese family model informs parent-child relationships in the contemporary Chinese context, particularly with respect to differences between daughters and sons. They also address concerns about a perceived 'ageing crisis' by

looking at overall support patterns and identifying the parent- and child characteristics that explain the strength (or weakness) of intergenerational solidarity. Most importantly, they are jointly informed by a sociological understanding of families as resilient networks of reciprocity that "adjust to the ongoing process of socioeconomic change by revising customary practices and building on preceding expectations and preferences" (Hashimoto, 1993, p. 4).

CHAPTER 2

Family Caregiving and Living Arrangements of Functionally Impaired Elders in Rural China[5]

SUMMARY

China has seen a rapid decline of the traditional multigenerational household and an increase in rural-to-urban migration, raising concerns about a possible breakdown of the informal support system. Against this background, the paper looks at family caregiving (or the absence thereof) to parents in three different living arrangements: with any child or child-in-law (coresident); independent with at least one child living in the same community (networked); and without any children in either the household or the community (isolated). It also compares the caregiving arrangements of single elders to those living with a spouse. The sample, which is derived from the comprehensive China Health and Retirement Survey (CHARLS), contains data on 887 functionally impaired individuals aged 60 and above. The findings suggest that married parents are mostly cared for by their spouse, even if they coreside with adult children. Proximity to children is particularly important for single elders, who are more likely to lack a caregiver when living independently. There appears to be a hierarchy in family care responsibilities, where children step in as caregivers only when the spouse is no longer able to fulfil this role. While these findings imply a significant deviation from traditional practices and norms of 'filial piety', they can be interpreted as a rational adaptation to the changed economic circumstances in rural China.

[5] A modified version of this chapter was published as: Gruijters, R.J., (2015), "Family Caregiving and Living Arrangements of Physically Impaired Elders in Rural China", *Ageing & Society*, pp. 1-23 doi:10.1017/S0144686X15001397. Online first: Link

"[Sons'] wives should serve their parents-in-law as they served their own. (…)
With bated breath and gentle voice, they should ask if their clothes are too warm
or too cold, whether they are ill or pained, or uncomfortable in any part; (…)
All this they will do with an appearance of pleasure to make their parents feel at ease."
(The Book of Rites, Book 10, translated by Legge, 1879)

INTRODUCTION

In rural China, children are typically seen as the main source of security in later life. The Confucian norm of 'filial piety' obliges adult children to provide their parents with financial and material support as well as physical care and assistance. The multigenerational household, in which older parents coreside with their adult children, is often seen as the embodiment of this informal support system (Silverstein, Cong and Li 2006; Whyte 2004). In recent decades, however, living arrangements of rural Chinese elders have become more fluid and diversified. Most notably, there has been a steep decline in coresidence rates. At the same time, a number of non-traditional living arrangements have risen into prominence, including the 'empty nest' (older people living alone or with a spouse only) and the 'skipped generation household' (older people living with grandchildren whilst the middle generation lives and works elsewhere).

The causes and consequences of changes in living arrangements are the topic of a lively debate both in the Chinese public discourse and in academic literature (see e.g. Benjamin, Brandt and Rozelle 2000; Biao 2007; Giles and Mu 2007; Giles, Wang and Zhao 2011; Silverstein, Cong and Li 2006; Zhang 2004). The decline in coresidence rates is normally attributed to China's transformation from a planned economy to a market-based system. Although successful in terms of stimulating economic growth and reducing absolute poverty rates, China’s economic reforms were accompanied by an increase in socio-economic inequality, particularly between urban and rural areas. This led to a massive outflow of workers from the countryside to the cities: the National Bureau of Statistics estimated the total 'floating population' in 2012 at 236 million (National Bureau of Statistics of China, 2013).

Since most migrants belong to younger age cohorts[6], large-scale out-migration has raised concerns about the well-being of older generations. They are often portrayed as victims of socio-economic modernisation and cultural change, left behind by their children who have moved to the cities in search of a better life. The decline of the multigenerational household is seen as a worrying trend that reflects a weakening of traditional norms of filial piety and intergenerational support (Croll 2006; Zhang, Gu and Luo 2014).

Others have argued that changes in living arrangements do not necessarily reflect a weakening of the intergenerational support system. Both in China and other East Asian countries, it has been observed that the decline in coresidence rates has been partially offset by a corresponding increase in older people living independently in close proximity to their children (Knodel & Ofstedal, 2002; X. Lei, Strauss, Tian, & Zhao, 2011; Whyte, 2004). This arrangement has been alternatively described as a 'networked' family or 'intimacy at a distance' (Thang 2010: 206). From this perspective, separate residences can be seen as a wealth effect reflecting both generations' preferences for privacy and independence (Giles, Wang and Zhao 2011). Living apart does not preclude the maintenance of close intergenerational ties nor the receiving of intensive support from adult children (Croll, 2006).

Thus far the academic discussion on social change and informal family support in rural China has mainly focused on the financial dimension, in particular the remittances provided by migrant children. This paper looks at another, equally important aspect of family support: the provision of care to older people with functional disabilities. Contrary to financial or even emotional support, caregiving requires frequent face-to-face contact (Silverstein & Litwak, 1993), which makes it particularly vulnerable to large-scale out-migration. It is thus surprising that there is little empirical research relating family caregiving to the recent phenomena of rural-to-urban migration and decreasing coresidence rates.

[6] It is estimated that more than 80 percent of rural migrants are younger than 40 (Cai et al., 2012, p. 14).

This paper seeks to fill this void by providing detailed statistics on the caregiving arrangements of physically impaired older adults, in line with the overarching research question "How does care provision vary by living arrangement?". In order to assess the importance of the proximity of children, it compares older parents in three different living arrangements: with any child or child-in-law (coresident); independent with at least one child living in the same community (networked) and without any children in either the household or the community (isolated). Multivariate logistic regression models were used to assess how they differed in their respective likelihood of not having any caregiver, receiving care from a child, and receiving care from a spouse. Further analyses were conducted by marital status and age cohort.

The findings contribute to related literature by 1) providing a more extensive typology of living arrangements, 2) considering various types of family caregivers in addition to adult children and 3) using a recent and nationally representative sample. Data were derived from 2011-2012 China Health and Retirement Survey (CHARLS), which is the most comprehensive source of information on older adults in China. In line with the substantive interest of the paper, the sample was limited to individuals over 60 who lived in rural areas[7] and had an explicit need for care. The issue of informal family care is particularly crucial in rural China because of the virtual absence of formal long-term care facilities, most of which are located in urban areas (Chow, 2011; Ikels, 2006). At the same time, demographic trends such as reduced fertility, out-migration and increased longevity put increasing pressure on the intergenerational support system[8]. The findings of this paper provide a first indication of how family care networks are responding to these on-going challenges.

[7] The urban-rural classification is provided by the National Bureau of Statistics of China, who define a locality as urban “if it is located in a city, suburb of a city, a town, suburb of a town, or other special areas where nonfarm employment constitutes at least 70 % of the work force” (Zhao, Strauss, et al., 2013, p. 19)

[8] Population ageing is particularly pronounced in rural China: the old age dependency ratio is set to increase from 13.3 percent in 2008 to 34.4 percent in 2030 (Cai et al., 2012, p. 23).

BACKGROUND AND HYPOTHESES

Family caregiving in East and West

The selection of family caregivers to frail older people is a complex process in which the availability of potential caregivers, the needs of the recipient as well as cultural norms and expectations all play an important role. Cantor's influential hierarchical-compensatory model of caregiving assumes that various categories of caregivers follow a descending order of preference. In Western societies, the primary caregiver of choice is normally the spouse, followed by children (particularly daughters) and more distant relatives (Cantor, 1979). Formal options such as residential care facilities may be called upon when care needs exceed the capacity of the informal support network.

In rural China on the other hand, formal long-term care facilities tend to be either absent or unaffordable. Like other Asian countries, China has a strong tradition of children caring for parents. According to Zhan and Montgomery "Traditional patterns of parent care have been widely attributed to the deeply rooted cultural belief of *xiao*, or filial piety, which has been long believed to be the essential element holding together the Chinese familial system of care, determining who is likely to be a care provider, and deciding the types and amount of care that are provided" (2003: 210). In the typical case, older Chinese would live with the family of their oldest son and receive physical care from their daughter-in-law (Cong & Silverstein, 2012b; Holroyd & Mackenzie, 1995; Zhan & Montgomery, 2003; Zimmer & Kwong, 2003). It is unclear to what extent this traditional pattern still holds following the decline of the multigenerational household. Several authors have observed that hierarchical norms of filial obligation have weakened, as children increasingly focus on their own nuclear family (Du 2013; Miller 2007; Zhang 2004). The following sections outline the most common family constellations in contemporary rural China and hypothesize about their relation to caregiving arrangements.

The decline of the multigenerational household

Living arrangements have changed particularly rapidly in rural China: the percentage of older people that live with an adult child has declined from almost 70 percent in 1991 to just over 40 percent in 2006 (Cai et al., 2012, p. 48). It is often assumed that sharing

a household with children is advantageous for elders, since various types of support and transfers tend to occur naturally and unacknowledged (Arber, 2013; Thang, 2010). Indeed, various studies identified important benefits from coresidence, including better mental health (Silverstein, Cong and Li 2006), a lower risk of poverty (Y. Yang, 2010), and more help from children (Song, Li and Feldman 2012). There is a wide-spread concern in China and other Asian countries that declining coresidence rates reflect the weakening of intergenerational ties and threaten the informal support network of older people (see e.g. Benjamin, Brandt and Rozelle 2000; Biddlecom, Chayovan and Ofstedal 2002; Guo, Chi and Silverstein 2009; Silverstein, Cong and Li 2006). Caregiving in particular requires frequent physical contact and is thus most easily provided by relatives that live with or nearby the recipient (Litwak & Kulis, 1987; Silverstein & Litwak, 1993). For this reason, Zhang and Yeung believe that increased rural-urban migration, changing family structures and the rising number of nuclear households raise questions about "the sustainability of the family institution in the provision of care" (2012: 615). Thus far no study has compared caregiving constellations of coresident and non coresident Chinese elders, although Peng, Wu and Ling found that living alone increased the risk of having unmet care needs (2014). Also, a study from rural Thailand has shown that parents living independently are much less likely to receive care from a child (Knodel & Chayovan, 2012). This leads to the hypothesis that older adults who do not coreside with children are 1) less likely to receive support from children and 2) more likely not to have a caregiver [Hypothesis 1].

The networked family perspective

Not all observers see the decline of the multigenerational household in negative terms. Recent qualitative studies suggest that even though the multigenerational household is still a traditional ideal in rural China, "the aged do not necessarily prefer or benefit from coresidence with their children" (Miller 2007: 32). Stress and conflicts caused by coresidence for both older and younger generations are frequently recurring themes. Many older Chinese have adapted their preferences and "no longer see coresidence with a married son as the ideal manifestation of filial piety" (Thøgersen and Anru 2008: 22) or are afraid of becoming a burden to their families. Proponents of this

view, which is more dominant in recent works, have pointed out that most non coresident parents live close to one or more of their children (sometimes in adjacent residences), and receive extensive support from them (Cai et al., 2012; Hermalin, 2002a; X. Lei et al., 2011). In a meta-study of ethnological findings from across Asia, Croll concludes that "the resource flows hitherto associated with coresidence are not constrained by the physical boundaries of separate households and that living near, as opposed to with, children does not necessarily mean that there are fewer resource flows between the generations" (2006: 485). The concept of the 'networked family' is often used to describe "the relations, exchanges and connections between separate but close-kin related nuclear households" (Croll 2006: 485). Networked parents enjoy the benefits of proximity whilst avoiding the downsides of coresidence, which include a lack of privacy and an increased potential for intergenerational conflict (Giles, Wang and Zhao 2011; Zhang 2004). In China, it has been observed that frail older people increasingly value and receive assistance from non coresident married daughters, whose traditional role is to look after their parents-in-law (J. Liu, 2014; Xu, 2001; Zhan & Montgomery, 2003). From this perspective there is thus no reason to expect substantial differences in caregiving arrangements between the networked and the coresident categories [Hypothesis 2].

Caregiving by spouses and other relatives

It appears that isolated older adults, who are neither coresident nor have children living nearby, are worst of in terms of caregiving. Children's propensity to provide care is normally found to decline gradually with geographical distance or travel time (e.g. Litwak and Kulis 1987), which suggests that the isolated category is least likely to receive support from children, and most likely to lack a caregiver [Hypothesis 3].

That being said, proximity to children is not the only factor that determines whether care needs are provided for. The presence of alternative caregivers such as a spouse or (adult) grandchildren may reduce the need to rely on children for support. The role of the spouse in particular has been largely neglected in studies on informal family care in China, presumably because of the perceived primacy of adult children as caregivers. It is likely however that the large-scale out-migration of children and corresponding decline in coresidence rates have increased the importance of spouses as caregivers,

particularly for men. In the absence of empirical studies on spousal caregiving in China, it can be insightful to look at studies from neighbouring countries that share some of rural China's socio-economic characteristics. For example, in rural Thailand spouses were found to be the most common caregiver for married elders, particularly if they did not live with or close to children (Knodel & Chayovan, 2012). In rural Vietnam on the other hand spouses were found to play a relatively marginal role, but receiving care from grandchildren was common (Hoi, Thang and Lindholm 2011). I therefore hypothesize that the presence of a spouse or a grandchild can mediate the negative impact of not living with children, particularly for isolated elders [Hypothesis 4].

Finally, it has been observed that the division of labour between family caregivers tends to shift over the life course. In Western countries, married parents most often receive care from their spouse. Children and other relatives generally take over primary caregiving responsibilities after widowhood or when the spouse experiences health problems, typically at a later stage in life (Chappell 1991; Penning 1990). It is uncertain whether a similar pattern holds in China, where taking care of elders is generally considered to be the responsibility of their children, and filial norms are more strongly developed than in the West (Cong & Silverstein, 2012b; Holroyd & Mackenzie, 1995; Whyte, 2003). According to Xu however, "spousal support can often postpone or avoid the period of complete dependency on children" (2001: 310), and it was observed that some parents transition into coresidence after widowhood or when their health deteriorates (Zimmer & Korinek, 2010; Zimmer & Kwong, 2003; Zimmer, 2005). We would therefore expect the role of different caregivers to vary by age, with 'younger old' parents more likely to receive care from a spouse and the 'oldest old' more likely to receive care from a child [Hypothesis 5].

DATA AND METHODOLOGY

Sample

All analyses are based on data derived from National Baseline of the China Health and Retirement Longitudinal Study (CHARLS), which was conducted in 2011-2012 (see Zhao, Strauss, et al., 2013). CHARLS is part of a family of surveys modelled on the American Health and Retirement (HRS) survey; including amongst others the Survey of

Health, Ageing, and Retirement in Europe (SHARE) and the Japanese Study on Ageing and Retirement (JSTAR). The Gateway to Global Aging Data created a harmonized version of CHARLS, which is comparable to the RAND HRS and other harmonized datasets. Wherever possible, this study used the harmonized variables[9].

CHARLS covers 28 out of 30 provinces in China and is nationally representative of the non-institutionalized population over the age of 45[10]. It has a total sample size of 17,708 individuals in 10,257 households (in case the main family respondent was married, the spouse was included in the sample as well). Each survey contains highly detailed information on topics such as demographics, family support and transfers, health status and functioning, employment, pensions, income and assets. Data quality was ensured by employing a Computer Assisted Personal Interviewing (CAPI) system as well as extensive quality checks and follow-ups. The rural response rate amounted to 94.15 percent (Zhao, Strauss, et al., 2013).

For the purposes of this paper, I only looked at respondents that lived in rural areas and had reached the age of 60, which is generally seen as the start of old age in China (being, for example, the eligible age to receive the New Rural Pension) (X. Lei et al., 2011). Moreover, I restricted the sample to respondents with at least one living child and at least one serious functional impairment (see below). After deleting 157 cases due to missing values on some key variables, the sample was reduced to 887 parents. In 79 households both husband and wife were over 60 and had a need for care. In this case, each spouse is both a potential care recipient and a potential caregiver (standard errors are clustered by household to correct within-household correlation in these cases).

[9] The Harmonized CHARLS dataset and Codebook, Version B (November 2015) was developed by the Gateway to Global Aging Data. The development of the Harmonized CHARLS was funded by the National Institute on Ageing (R01 AG030153, RC2 AG036619, 1R03AG043052). For more information, please refer to www.g2aging.org.

[10] Currently only 0.8 percent of the older population stays in residential care facilities, most of which are located in urban areas (Chow, 2011).

Dependent variables

I follow Uhlenberg in defining caregiving as "assistance provided to persons who cannot, for whatever reason, perform the basic activities or instrumental activities of daily living for themselves" (1996: 762). Activities of Daily Living (ADLs) and Instrumental Activities of Daily Living (IADLs) are standard measures of functional ability that have been incorporated in most health-related household surveys (Vlachantoni, Shaw, Evandrou, & Falkingham, 2013; Wolff & Kasper, 2006). In CHARLS, difficulties with each ADL (dressing, bathing, eating, getting out of bed, using the toilet, controlling urination and defecation) and IADL (doing chores, preparing hot meals, shopping, managing money, making phone calls, taking medications) are measured on a four-point scale: 1) I don't have any difficulty, 2) I have difficulty but can still do it, 3) I have difficulty and need help, and 4) I cannot do it.

Respondents are considered functionally impaired and included in the subsample if they responded 3) or 4) to at least one ADL or IADL, which is true for 23 percent of the total sample of rural people above the age of 60 (note that the analytical sample thus includes only respondents who explicitly state their need for care and excludes those who merely express difficulty). These respondents were asked the follow-up question "Who most often helps you with [list of ADLs and IADLs]?" Possible responses included various categories of family members, paid helpers or volunteers, as well as 'no one helped'. Although they could theoretically indicate up to three individuals, most mentioned only one (70 percent) or two (17 percent) primary caregivers. For the regression analyses these answers are converted to four binary outcome variables representing (1) not having any caregiver, (2) receiving care from any child or child-in-law, (3) receiving care from a spouse and (4) receiving care from a grandchild.

Table 2: *Descriptive statistics for sample, by living arrangement*

Variables and categories	Coresident %	Networked %	Isolated %	Total %
Caregiver: none				
Has a caregiver	89.41	83.01	81.01	86.28

Has no caregiver	10.59	16.99	18.99	13.72
Caregiver: child				
No child (in-law) caregiver	40.85	80.90	92.94	60.39
Any child (in-law) caregiver	59.15	19.10	7.06	39.61
Caregiver: spouse				
No spousal caregiver	67.10	35.08	31.98	52.31
Spouse caregiver	32.90	64.92	68.02	47.69
Caregiver: grandchild				
No grandchild caregiver	93.01	96.08	93.61	94.08
Any grandchild caregiver	6.99	3.92	6.39	5.92
Gender of respondent				
Male	33.27	44.19	45.74	38.38
Female	66.73	55.81	54.26	61.62
Marital status				
Married: healthy spouse	33.88	59.87	61.43	45.77
Married: spouse has care need	17.15	20.03	25.10	19.09
Single / widowed	48.97	20.10	13.47	35.14
Functional limitations				
One care need	36.47	43.44	43.85	39.66
Two or three care needs	29.85	29.82	34.20	30.40
Four or more care needs	33.67	26.74	21.96	29.95
Self-rated living standard				
(Relatively) high	3.89	4.95	4.10	4.26
Average	49.89	42.52	50.60	47.60
(Relatively) poor	46.22	52.53	45.31	48.14
Highest level of education				
No education	66.98	58.80	49.03	62.06
(Some) primary school	27.65	34.87	44.50	32.12
Middle school or higher	5.37	6.33	6.47	5.82
Number of children				
One child	10.99	3.91	11.18	8.73
Two children	16.77	10.00	20.19	15.02
Three or more children	72.23	86.10	68.63	76.25
Gender of children				

Both sons & daughters	67.30	82.70	68.48	72.41
Sons only	22.95	12.62	18.01	18.99
Daughters only	9.75	4.68	13.51	8.60
Age				
Mean age (SD)	72.54	72.03	68.97	71.92
Total	55.03	32.25	12.72	100.00

Note: Weighted percentages, un-weighted N. SD: Standard Deviation.

Independent variables

The primary variable of interest in this study is the living arrangement of the parent in relation to his or her children. Many observers believe that close proximity to children can be a functional equivalent to coresidence, whereas others see any kind of non coresidence as a sign of weakened intergenerational ties. In order to test these hypotheses, living arrangement is divided into three categories:

- Coresident (sharing a household with any child and / or child in law)
- Networked (not coresident, but with at least one child living in the same village)
- Isolated (not coresident, all children living outside the village)

Control variables

Respondent gender. A number studies have shown than mothers are more likely to receive informal family care (e.g. Yarger and Brauner-Otto 2014; Zimmer and Kwong 2003). On the other hand, age differentials in marriage and the gendered nature of caregiving suggest that men are more likely to receive care from their spouse (Haberkern, Schmid and Szydlik 2015; Zhan and Montgomery 2003).

Intensity of care needs. Family caregiving decisions are generally responsive to parents' needs (Silverstein and Litwak 1993; e.g. Guo, Chi and Silverstein 2009; Song, Li and Feldman 2012). Whilst all parents in the analytical sample have an identified need for support, the intensity of this need may vary. I therefore control for age and for the number of (I)ADLs that the parent is not able to perform independently[11]. Age is a

[11] I also tested for self-rated health and cognitive capability, but this did not significantly improve the model.

particularly important control variable because it is strongly correlated with a number of other factors and life course events that may affect care needs and caregiving, including health status, income generating capacity and social status.

Potential caregivers. The probability that a parent receives care when needed is likely to increase with the number of potential caregivers. Respondents with a spouse may have a lower need to rely on children for support, but when both spouses have functional impairments this may reduce their capacity for mutual care. The marital status variable therefore has three categories: 1) *married: healthy spouse*, 2) *married: spouse has care need* and 3) *single*. The large majority of respondents belonging to the 'single' category are widowed. I also include the total number of children as well as a categorical variable indicating whether the children are all male, all female, or both sexes. It is typically believed that parents who have both daughters and sons are better off in terms of care than those who have only sons or daughters (Xu, 2001).

Socio-Economic Status (SES). The intergenerational reciprocity perspective assumes that parents who control assets or have an independent source of income are more likely to receive care transfers from their children, since they can reciprocate these by making financial transfers or bequests to the caregiver. On the other hand, high SES may relate to a more individualistic lifestyle, which reduces the probability of receiving family care (Yarger & Brauner-Otto, 2014). I include two proxies for SES to control for these competing effects: education level (in three categories) and self-reported living standard (poor, average or high)[12].

Analytical strategy

In the first stage, logistic regression models were used to assess how living arrangements affect the likelihood of (1) not having any caregiver and (2) receiving care from a child or child-in-law, controlling for the variables described above. In order to assess how the presence of a spouse affects this relationship, these analyses were

[12] Self-reported living standard is considered the most reliable economic indicator because it is collected individually (as opposed to household income) and because of inherent problems collecting 'hard' income data in a setting characterized by informal labour and subsistence agriculture.

replicated for the married and single sub-samples. Single elders are often considered a vulnerable group (Barrientos, Gorman and Heslop 2003), and their caregiving arrangements are thus of particular interest. Finally, I explore the role of age in more detail. Since CHARLS uses a clustered sampling design, sampling weights (which include a correction for non-response) are applied to all descriptive tables and figures. Please note that study is based on cross-sectional data and living arrangements are not exogenous to family caregiving; results should therefore not be interpreted as causal relationships.

RESULTS

Table 4 provides descriptive statistics of all dependent and independent variables, separated by living arrangement. It shows that about 52 percent of sampled parents were coresident, 34 percent were networked and 14 percent lived isolated from their children. The corresponding figures for non-impaired parents were 45, 36 and 18 percent respectively, which suggests that coresidence was at least partially responsive to functional health, as Korinek, Zimmer and Gu (2011) have shown. The prevalence of networked extended families demonstrates that out-migration of children was not the only reason for non-coresidence: many functionally impaired elders maintained independent households rather than moving in with a nearby child.

Most sampled parents had three or more children[13], and just over a third did not have a spouse. They also tended to have little or no formal education and to rate their standard of living as (relatively) poor or average (see Table 4). Figure 4 plots living arrangement and the presence of a spouse against age. Coresidence tends to increase from around age 70, when a large number of parents have become widowed. As a result, coresident parents are slightly older than average. Coresident, networked and isolated parents differed in a number of other aspects as well. For example, the coresident group had more intensive care needs and isolated respondents were more

[13] The sample includes parents over 60 only, most of whom had children before the introduction of the fertility reduction policy in 1979.

likely to be male and to be married. All these variables will be controlled for in the regression analyses.

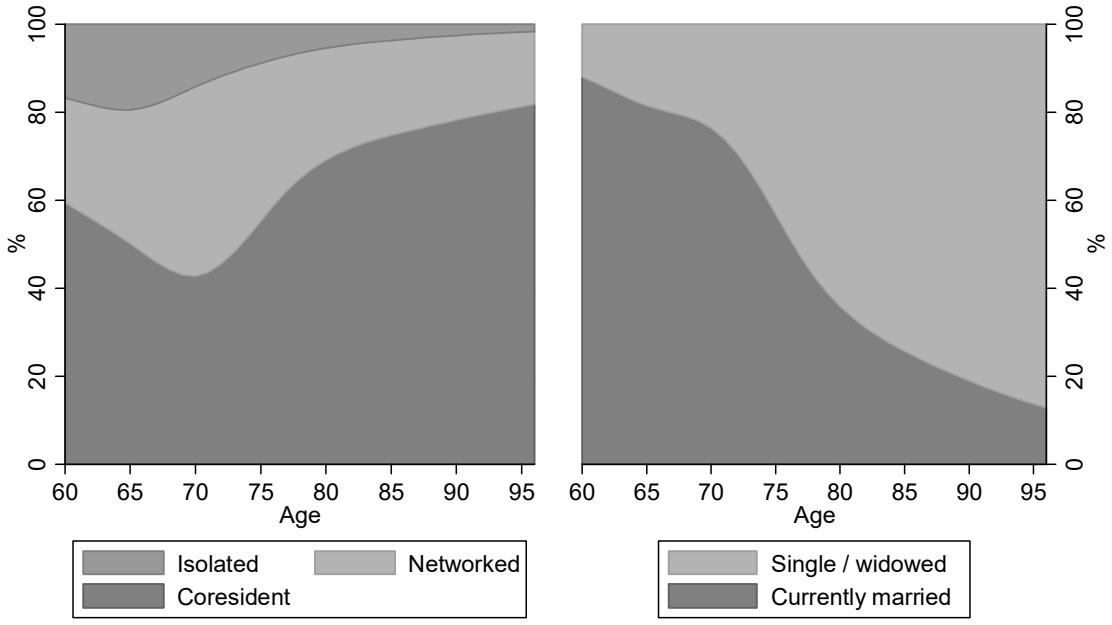

Figure 4. Living arrangement (l) and presence of spouse (r), by age of respondent.

Stacked plots using restricted cubic spline smoothing of proportions. Based on the analytical sample (rural parents, 60+, at least one functional limitation: *N* = 887).

Table 4 also lists the primary caregivers of the sampled respondents. It shows that 14 percent of the sample respondents did not have any caregiver, 40 percent received care from a child (in-law) and 47 percent from a spouse (note that respondents could indicate more than one primary caregiver). The high incidence of spousal caregiving, particularly for the networked and the isolated groups, highlights the need to pay more attention to this particular care arrangement. Grandchildren played a somewhat less important role: they were primary caregivers in about 6 percent of all cases.

Table 3**:** *Logistic regression models, full sample*

	M1: No caregiver			M2: Child (in-law) caregiver		
	O.R.	*(S.E.)*	*P.P.*	*O.R.*	*(S.E.)*	*P.P.*
Living arrangement:						
Coresident	ref.		0.11	ref.		0.46
Networked	1.89*	(0.49)	0.18	0.22***	(0.05)	0.22
Isolated	2.21**	(0.68)	0.20	0.06***	(0.03)	0.09
Gender:						
Male	ref.		0.12	ref.		0.29
Female	1.42	(0.32)	0.16	1.53*	(0.31)	0.35
Intensity of need:						
One care need	ref.		0.23	ref.		0.31
Two or three care needs	0.48**	(0.11)	0.13	1.00	(0.22)	0.31
Four or more care needs	0.09***	(0.04)	0.03	1.44	(0.33)	0.36
Age	0.97*	(0.02)		1.05**	(0.02)	
Socio-Economic Status:						
Living standard: (rel.) high	ref.		0.06	ref.		0.31
Living standard: Average	2.10	(1.57)	0.12	1.33	(0.55)	0.35
Living standard: (rel.) poor	3.68^{+}	(2.75)	0.18	0.89	(0.37)	0.30
No education	ref.		0.14	ref.		0.33
(Some) primary school	1.50^{+}	(0.36)	0.18	0.86	(0.20)	0.31
Middle school or higher	0.39	(0.31)	0.06	0.61	(0.27)	0.27
Potential caregivers:						
Married: healthy spouse	ref.		0.10	ref.		0.19
Married: care need	2.09*	(0.62)	0.17	2.01**	(0.54)	0.29
Single / widowed	3.42***	(0.98)	0.24	8.67***	(1.98)	0.56
One child	ref.		0.24	ref.		0.28
Two children	0.58	(0.28)	0.16	1.35	(0.59)	0.32
Three or more children	0.45^{+}	(0.21)	0.14	1.38	(0.54)	0.33
Both sons & daughters	ref.		0.16	ref.		0.31
Sons only	0.65	(0.25)	0.11	1.17	(0.34)	0.33
Daughters only	0.84	(0.34)	0.14	3.83***	(1.48)	0.50
Observations	887		0.11	887		0.56
Pseudo R^2	0.157			0.325		

Note: O.R.: Odds Ratio. S.E.: Robust Standard Error. P.P.: Average Predicted Probability.
Significance levels: + p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001.

The determinants of receiving informal family care

Table 3 presents the results from two logistic regression models predicting the likelihood of not having any caregiver (Model 1) and receiving care from a child or child-in-law (Model 2). To facilitate their interpretation I present the results both as odds ratios and as average predicted probabilities (calculated using the observed values of all other covariates). Predicted probabilities show that family caregiving was strongly related to living arrangements. As expected, the isolated group had the lowest probability of receiving care from a child. Contrary to the 'networked family' hypothesis, networked parents were much less likely to receive care from a child than coresident parents (46 versus 22 percent). Moreover, both networked and isolated parents were more likely to have unmet care needs (18 and 20 percent respectively). These findings suggest that the networked family is at best an imperfect alternative to coresidence. Descriptive evidence however suggests that most non-coresident respondents live with their spouse and may thus be less dependent on adult children to meet their care needs. Indeed, the odds of having a child as primary caregiver were 8.7 times higher for single respondents than for respondents with a healthy spouse. Children were also more likely to be caregivers when both spouses had a physical impairment, which suggests that they step in when their parents are no longer capable of providing mutual care. The role of marital status and spousal caregiving will be explored further in the next section.

The control variables largely have the expected direction. For example, mothers and comparatively older parents were more likely to receive care from a child. Parents' socio-economic status appeared to be unrelated to child caregiving, although poor living standards increased the risk of not having a caregiver ($p < 0.10$). Perhaps surprisingly in the Chinese context, the number of children did not have a major effect on caregiving after controlling for living arrangement and other covariates. Zimmer and Kwong (2003) and Song (2012) came to a similar conclusion. It is thus the proximity to children that mattered for caregiving rather than the number of offspring. Child gender also played a role: parents with daughters only were more likely to receive care from children than those with only sons or children of both sexes.

Table 4: *Logistic regression models, by marital status (control variables not shown)*

Currently married respondents:

	Model 1: No caregiver			Model 2: Child (in-law) caregiver			Model 3: Spouse caregiver		
	O.R.	*(S.E.)*	*P.P.*	*O.R.*	*(S.E.)*	*P.P.*	*O.R.*	*(S.E.)*	*P.P.*
Coresident	ref.		0.12	ref.		0.33	ref.		0.66
Networked	1.07	(0.34)	0.13	0.20***	(0.06)	0.10	2.58***	(0.64)	0.81
Isolated	1.21	(0.43)	0.14	0.10***	(0.05)	0.05	2.35**	(0.67)	0.80
Male	ref.		0.08			0.15			0.84
Female	2.39***	(0.62)	0.16	1.58+	(0.38)	0.21	0.34***	(0.07)	0.67
Observations	639			639			639		
Pseudo R^2	0.175			0.159			0.151		

Single respondents:

	Model 4: No caregiver			Model 5: Child (in-law) caregiver			Model 6: Grandchild		
	O.R.	*(S.E.)*	*P.P.*	*O.R.*	*(S.E.)*	*P.P.*	*O.R.*	*(S.E.)*	*P.P.*
Coresident	ref.		0.13	ref.		0.80	ref.		0.12
Networked	3.60**	(1.58)	0.31	0.26***	(0.10)	0.56	0.74	(0.38)	0.09
Isolated	7.05**	(4.39)	0.43	0.02***	(0.02)	0.14	3.58*	(2.26)	0.31
Male	ref.		0.25	ref.		0.63	ref.		0.11
Female	0.60	(0.29)	0.19	1.60	(0.68)	0.70	1.23	(0.56)	0.13
Observations	248			248			248		
Pseudo R^2	0.215			0.275			0.058		

Note: O.R.: Odds Ratio. S.E.: Robust Standard Error. P.P.: Average Predicted Probability. Control variables (same as in Table 3) not shown: full table available upon request. Significance levels: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

The role of marital status and alternative caregivers

In order to better understand the role of marital status in defining caregiving arrangements, Table 4 presents separate analyses for parents living with and without a

spouse. In line with Hypothesis 4 I also consider the importance of alternative caregivers, notably the spouse for married respondents (Model 3) and grandchildren for single respondents (Model 6). The predicted probabilities from each model are plotted in Figure 5.

Figure 5 shows that spousal caregiving was predominant amongst married respondents. Even for respondents that were married and living with a child, the predicted probability of the spouse being a caregiver was 66 percent, compared to 33 percent for any child (in-law). Moreover, respondents that lived with a spouse had a constant, low risk of unmet care needs regardless of the proximity of children. As expected, men were more likely to receive care from their spouse.

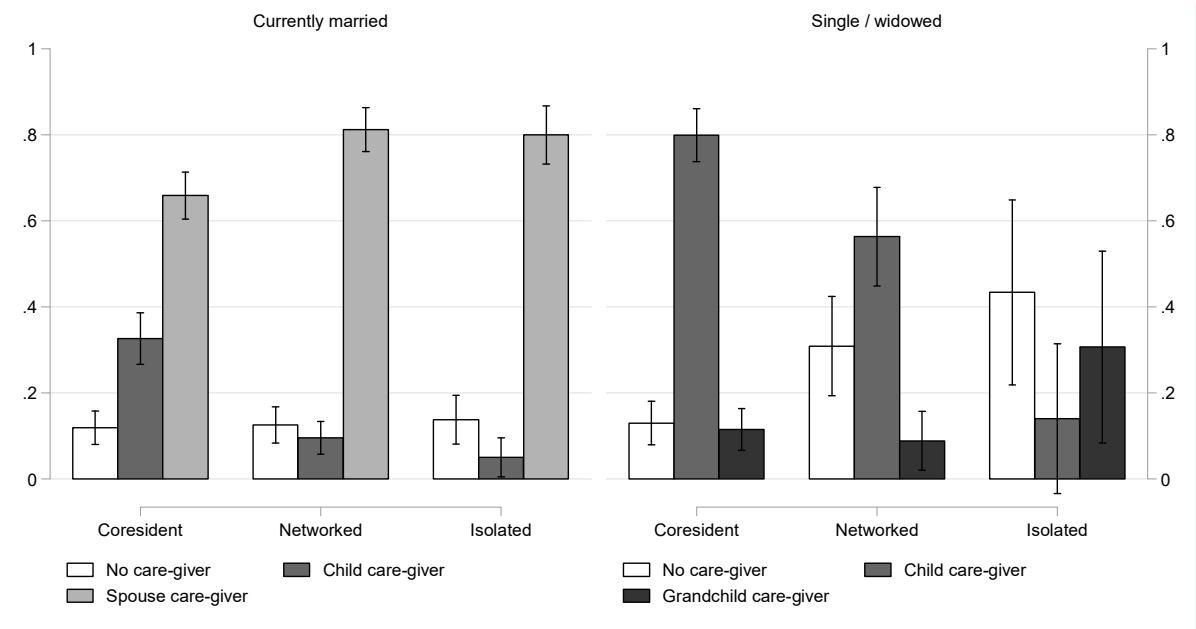

Figure 5. Predicted probabilities, by living arrangement and presence of spouse.

Average predicted probabilities from the regression models presented in Table 4. Spikes indicate 95 percent confidence intervals. Based on responses to the question "Who most often helps you with [list of ADLs and IADLs]?" Please note that probabilities do not necessarily add up to one because respondents could indicate multiple caregivers or other caregivers.

Single respondents, most of whom were widowed, relied largely on children to fulfil their care needs. As a result, proximity to children was of more importance for this population segment. In particular, both isolated and networked respondents had much higher levels of unmet care needs than their coresident counterparts (Model 4). It is

possible that some of these elders have indeed been 'abandoned' by their children, although they constitute a relatively small percentage of the sample. Moreover, as can be seen in Model 6, grandchildren often step in when neither a spouse nor a child is available to provide care. The role of gender also varies according to marital status. Notably, after controlling for gender differences in other covariates, married mothers have a higher risk of unmet care needs than married fathers ($p < 0.001$), but for single parents the effect is reversed ($p > 0.10$).

Family caregiving over the life course

Family caregiving arrangements tend to change over time in accordance with the needs of the recipient and the availability of various types of caregivers. As a result, comparatively older parents are expected to rely more heavily on their children and other relatives rather than on a spouse. To illustrate the effect of age, we can compare the predicted probabilities of having a particular caregiver at different ages. Figure 6 shows that spousal caregiving declines sharply with age, whilst the probability of having a child caregiver increases. The probability of not having a caregiver is highest around age 70 and then declines. Further research will be necessary to determine which life course events induce a change in caregivers, and to distinguish between age and cohort effects.

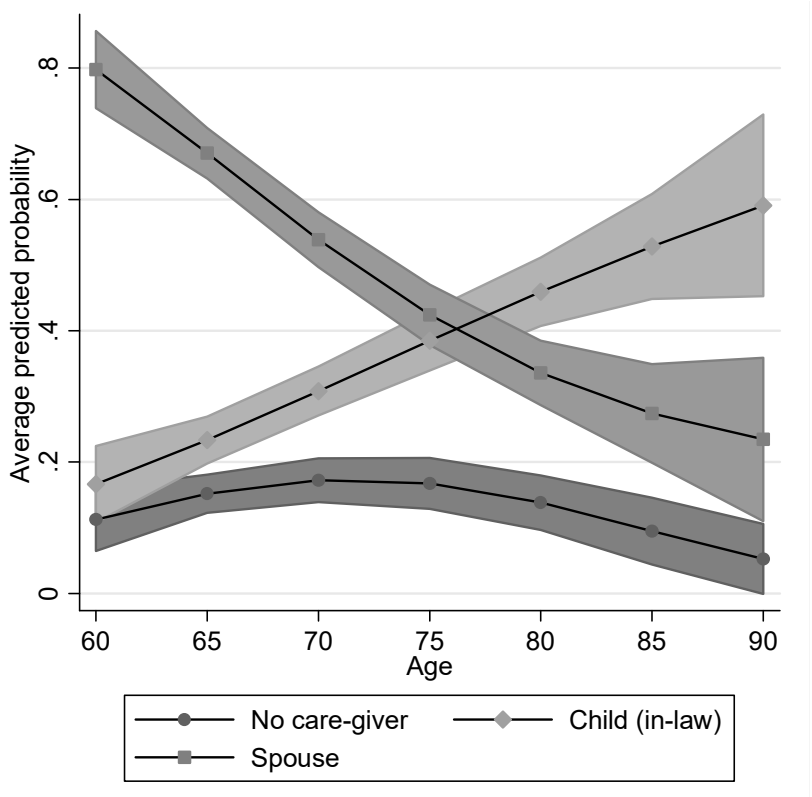

Figure 6. Main caregiver(s) of physically impaired elders, over age.

Average predicted probabilities from regression analyses on the full analytical sample (not shown). Shaded areas indicate 95 percent confidence intervals. Note that respondents could indicate other or multiple caregivers.

DISCUSSION

The purpose of this paper was to identify patterns in family care provision in rural China, which recently experienced an unprecedented decline in intergenerational coresidence. In particular, it tried to assess whether living close to children can be considered a functional equivalent to coresidence and how the presence of a spouse affects family caregiving choices.

CHARLS data indicate that approximately one out of every seven older parents in rural China did not receive any help with (I)ADLs, in spite of a reported need. This is higher than what was reported by Peng, Wu and Ling (2014), although their sample only included respondents aged 80 and above. The findings showed that older adults with

unmet care needs are predominantly non coresident, which is in line with Hypothesis 1. It is important to note that this effect only occurred for widowed elders: those who lived with a spouse were equally (un)likely not to have a caregiver as the coresident group. The presence of a spouse thus mediated the negative impact of not living with children, which is in line with Hypothesis 4. The fact that widows –most of whom are female and have low living standards– are more likely to have unmet care needs is rather worrying. The Chinese government has tried to improve the position of elders by enshrining filial responsibility into law (P. Du, 2013), but this is unlikely to resolve the complex problems that lead to deficiencies in intergenerational support.

The second hypothesis regarded parents that live close to their children rather than in the same household. The networked family arrangement is often seen as an alternative to coresidence, granting privacy and independence to both parents and children whilst maintaining the close intergenerational ties typical for the multigenerational household. The findings provided mixed evidence for this view. Married parents that lived independently were mostly cared for by their spouse, regardless of whether a child lived nearby. For single parents however, having one or more children in the locality can provide important benefits.

The findings also showed that the spouse is the most common caregiver overall. Due to mortality and morbidity however, comparatively older respondents are less likely to be able to rely on a spouse. Since caregiving by children increases with age Hypothesis 5, there appears to be a hierarchy in family caregiving responsibilities, where children (or grandchildren) step in only when the spouse is no longer able to fulfil this role (see also Miller 2007; Xu 2001; Zimmer 2005). In this sense, Chinese caregiving patterns are rather similar to those observed in the West. This is a somewhat surprising finding because the discourse on caregiving in China and other Asian countries is largely focused on adult children. The predominance of spousal caregiving in rural China is likely a result of the unprecedented decline in coresidence rates. If, and under what circumstances, the independent living arrangement reflects the preferences of frail older people is a topic that deserves more attention in the Chinese context.

The findings of this study do not suggest that children have abandoned their aged parents. First of all, it was shown that caregiving is generally responsive to need.

Parents that are widowed and / or comparatively older are more likely to receive care from a child. Secondly, the decision to leave care in the hands of spouses or even grandchildren reflects a likely adaptation to the changed economic circumstances in rural China. Young adults may be more important to their families by working in urban areas and remitting part of their salary to support family members back home. Indeed, there is ample evidence that most labour migrants provide significant financial support to their parents and maintain close emotional bonds (Biao 2007; Cai, Giles and Meng 2006; Y. Du, Park and Wang 2005; Giles, Wang and Zhao 2011; Guo, Aranda and Silverstein 2009; Liu 2014).

The above findings should be seen in the light of a number of limitations. First of all, since the paper is based on cross-sectional data, it is not able to account for life course transitions in both caregiving and living arrangement. There is substantial evidence that parents move in with their children (or vice versa) in order to receive care (Miller 2007; Korinek, Zimmer and Gu 2011; Xu 2001; Zimmer and Korinek 2010). When further waves of CHARLS become available, it will be possible to relate changes in the location of parents and children to caregiving arrangements. For example, it might be the case that networked children are more likely than migrant children to move in with parents and become primary caregivers. Furthermore, I could not control for certain (potential) confounding variables such as emotional closeness between parents and children because they were not measured in CHARLS. Previous studies have shown that intra-family conflicts and disagreements are an important reason for disruptions in the intergenerational support system. Finally, the paper focused on primary caregivers only. Future research may want to consider secondary caregivers as well as task specificity in caregiving.

These limitations notwithstanding, the study provides a detailed account of informal family care provision in rural China, using a comprehensive and recent dataset of functionally impaired elders. It extends previous literature by comparing different types of caregivers and living arrangements, particularly the role of spouses and networked children.

The findings raise serious questions about the sustainability of the 'traditional' way of providing elder care in rural China, in which the family takes up the entire caregiving

burden. CHARLS data show that a majority of physically impaired older adults now live independently from their children and are primarily cared for by their spouse. This development is likely to continue as increasing longevity, low birth rates and large scale rural-to-urban migration further erode the ratio of potential child caregivers to recipients of care. It is important to note that population ageing is still at an early stage in China; the cohorts that were most affected by the fertility reduction policy are only beginning to approach later life.

Still, even today a substantial number of older adults do not receive the care that they need, and they tend to belong to the most disadvantaged segments of the older population. The plight of rural elders has received considerable attention in the Chinese public discourse, and there is a growing awareness that families cannot be expected to shoulder the entire caregiving burden alone. Through the New Cooperative Medical Insurance Scheme (NCMS, established in 2008) and the New Rural Pension Programme (NRPP, established in 2009), China has recently expanded basic health insurance and (minimal) pension coverage to the majority of the rural population, which is a major achievement. With respect to long-term care, however, the government's effort has been less comprehensive. Experts have argued for the establishment of a long term care insurance scheme similar to the ones found in Japan and Korea, as well as for the expansion of (community-based) nursing homes and home care services (Du 2013; Glass, Gao and Luo 2013; Peng, Wu and Ling 2014). Given the persistent low income levels of rural elders, such initiatives would need significant public funding in order to reach the most vulnerable groups.

CHAPTER 3

Daughters and Sons' Remittances in Rural China: Findings from a National Survey

SUMMARY

In China, it has historically been the responsibility of sons rather than daughters to provide economic support to older parents. I analyzed whether such gender differences persist in contemporary rural China and how they can be explained. The study is based on a sample of 12,389 adult children derived from the nationally representative 2011 China Health and Retirement Longitudinal Study (CHARLS). I used a two-part model that takes into account both the likelihood and the level of economic support provided to parents. The result show that sons and daughters were equally likely to remit to parents, although sons tended to provide a somewhat higher amount. The support of parents by both daughters and sons was found to be strongly related to out-migration and the receipt of grandchild care, but the negative effect of marriage was stronger for daughters. I conclude that the traditional intergenerational support model, centered on the strongly gendered norm of filial piety, has been renegotiated in the wake of China's demographic and economic transformation. The increased importance of daughters as a source of economic security in later life is likely to reduce parents' preference for sons.

"While his parents are alive, a son should not dare to consider his wealth his own nor hold it for his own use only."

(The Book of Rites, Book 17-30; translated by Dawson, 2002)

INTRODUCTION

The economic support of parents by their children is an ancient tradition and a core aspect of the social contract in rural China. The provision of support to parents is both a means of demonstrating *filial piety* and a way of redistributing income within the family. Traditionally, such support was mainly provided by sons, hence the saying "raising a son is insurance for old age" (Whyte, 2003; Yan, 2003).

In recent decades however, these traditional norms and customs have been challenged by the rapid socio-economic, demographic and cultural changes that have been taking place in rural China. Women have nearly closed the educational gap and are increasingly likely to seek wage employment, often in urban areas (Chiang et al., 2015). Against this background, a number of ethnographic studies have indicated that the traditional division of labor in the provision of parental support is changing, and that parents increasingly receive economic transfers from daughters as well as sons (e.g. Miller, 2004; Shi, 2009; H. Zhang, 2005).

The present study analyses to what extent these developments are reflected in the actual amount of economic support (remittances) parents received from each of their non-coresident adult children. Whereas most literature on intergenerational support in China focuses on the parent's perspective, this study takes the individual child as the unit of analysis. In addition to comparing overall economic support by gender, it assesses how child-level factors such as marriage, migration status and grandchild care received from parents mediate support by daughters and sons. The data have been derived from the nationally representative 2011 China Health and Retirement Longitudinal Study (CHARLS), which includes extensive information on both parents and children.

I extend previous work by Xie and Zhu (2009) and Zhu (2016) in looking at rural rather than urban China. The focus on rural China is important because rural elders suffer

disproportionately from poverty and are much less likely to receive pensions and other types of formal support than their urban counterparts. The virtual absence of a public safety net implies that more than half of them rely on economic support from children as their primary source of subsistence (Giles et al., 2010). Changes in the intergenerational support system are therefore of particular importance for this population segment.

The study contributes to our understanding of intergenerational support in China by demonstrating that 1) daughters provide substantial economic transfers to parents, 2) unmarried sons and daughters provide similar levels of support and 3) both sons' and daughters' support is at least partially a compensation for grandparents taking care of grandchildren. Based on these findings, which run counter to traditional practices, I suggest that the classical interpretation of filial piety (Greenhalgh, 1985) is no longer an adequate framework for understanding intergenerational transfers in rural China and I discuss alternative accounts based on the 'renegotiated' intergenerational contract (Croll, 2006).

THE CHINESE FAMILY: PAST AND PRESENT

The literature on intergenerational support in China typically refers to the *traditional Chinese family model* as a heuristic for understanding the particularities of family relations in the Chinese context. Although it has been noted that even in ancient times the traditional model was not always adhered to in practice, its fundamental principles and institutions have guided Chinese family life for more than two millennia and still hold considerable sway in contemporary China (Ikels, 2006; Whyte, 2003). In the following section, I provide a short overview of the traditional Chinese family model and the ways in which it has been challenged by China's socio-economic transformation in the past decades. I then proceed to develop a number of research questions and hypotheses.

Chinese family values have been strongly influenced by the teachings of Confucius, which can be characterized as patriarchal and highly hierarchical. Primary amongst them is the norm of filial piety, which governs intergenerational relations. The doctrine

of filial piety is strongly gendered, and primarily refers to the relationship between parents and sons (Miller, 2004). The custom of patrilocality, which is another core aspect of the traditional Chinese family, implies that women "belong" to the husband's family after marriage. Except in special instances, a married daughter would typically not maintain an intensive support relationship with her natural parents (hence the Chinese saying that refers to a married daughter as "spilled water") (Shi, 2009; H. Q. Yang, 1996). In a highly influential article, Greenhalgh (1985) described a gendered division of labor in which supportive relations between parents and sons "were higher-flow contracts that approximated generalized exchange, while contracts between parents and daughters were lower-flow contracts that more fit closely the balanced mode" (p. 269). Because married daughters are no longer part of the family line, their support is seen as optional: "a bonus, which is not an earned right" (Xu, 2001, p. 311).

The importance of sons as a provider of security in later life has contributed to a strong preference for male children and a lack of investment in daughters' education (Guo et al., 2013). An undesirable side-effect of son preference is a high rate sex-selective abortions, which is reflected in China's unbalanced sex ratio: in some provinces, more than 130 boys were born for every 100 girls born in the year 2000 (Lai, 2005).

There are numerous reasons to believe, however, that the traditional family model is no longer an adequate depiction of Chinese family life. Gender equality has increased markedly in recent decades, particularly in the educational domain (Hannum, 2005). Women also tend marry later and are increasingly likely to leave the parental household before marriage, for example to pursue higher education or wage labor (Xie & Zhu, 2009). Educated women have higher earning power and are thus in a better bargaining position vis-à-vis their husband and parents-in-law. Moreover, reduced fertility rates, partially as a result of the government's fertility reduction policy, mean that younger parent cohorts having fewer or even no sons to rely on for support. Against this background, Croll (2006) argued that the intergenerational contract in contemporary Asia has moved from hierarchical norms of filial obligation towards more egalitarian motives of mutual reciprocity. Another aspect of the 'renegotiated' contract is the strengthening of support relations between daughters and their natural

parents. According to Croll "there is an emerging consensus that daughters constitute a largely untapped potential for support that is increasingly appreciated" (2006, p. 481).

RESEARCH QUESTIONS AND HYPOTHESES

The literature reviewed in the previous section suggests that traditional norms and gender roles in rural China have been subject to change. The objective of this paper is to assess how this has affected the gendered division of intergenerational support. The first research question is therefore:

Question 1: Does the likelihood and level of economic support to parents differ between daughters and sons?

The traditional Chinese family model suggests that parents invest in sons as a means of securing their support in old age. This long-term reciprocal relationship is maintained by social expectations and the gendered norm of filial piety. Daughters are excluded from this arrangement, and would thus be expected to provide much lower support (Greenhalgh, 1985). Older studies provide evidence for this view. In a classic study of intergenerational support in Taiwan, Lee and colleagues conclude that

> "…daughters' support still remains very much supplementary. Although 'ceremonial' financial support remains almost as pervasive as among sons, the average amounts are much smaller, rising to significant levels only among a small minority." (1994, p. 1035)

On the other hand, recent case studies have shown that parents increasingly rely on (economic) support from daughters as well as sons (S. Li, Feldman, & Jin, 2004; Miller, 2004; Whyte, 2004; Xu, 2001; H. Zhang, 2007). These findings were typically explained by a combination of reduced family sizes and women's economic empowerment, which is in turn related to an increased demand for female (migrant) labor in China's growing economy. For example, Zhang suggested that "the filial role of daughters is greatly facilitated by new cash-earning opportunities and new paths of economic mobility for rural youths" (2007, p. 694).

Thus far these observations have not been tested in nationally representative studies, which mostly looked at the total amount of support received by parents rather than its

distribution across sons and daughters (e.g. Cai et al., 2006; Lee & Xiao, 1998). An exception is Xie and Zhu's study (2009), which looked at gender differences in economic support in three large Chinese cities. Surprisingly, they found that daughters tend to provide more support than sons. They explained that in urban China economic support from children has become largely symbolic, because most parents have incomes or pensions that enable an adequate standard of living. Daughters were more likely than sons to provide such symbolic support as a way of maintaining and strengthening kinship ties. There are a number of reasons to believe that the situation in rural China, which is the focus of this study, is not comparable to that in the large metropolises. First, living standards in rural areas are much lower and most parents do not receive adequate pensions, so that support from children is a necessary source of subsistence rather than an optional benefaction. Moreover, traditional norms and values are considered to exert a stronger influence in rural China (Miller, 2004). Finally, in spite of increased female labor participation and educational attainment in recent decades, persistent gender inequality in income and household decision-making processes continues to limit rural daughters' opportunities to economically support their natural parents (Hannum, 2005). Lei Lei (2013) found substantial rural-urban differences in the frequency of various types of intergenerational transfers, with rural areas conforming more closely to the traditional model. I therefore hypothesize that rural sons' remittances continue to exceed those of daughters, in line with traditional gendered division of intergenerational support.

In order to more fully understand gender dynamics in the provision of economic support, we should also take into account the motivations to remit. Previous studies have suggested that these may be different for daughters and sons (Greenhalgh, 1985; Lee et al., 1994; Song et al., 2012; H. Q. Yang, 1996). Support from sons on the other hand is treated as a moral obligation, the amount of which is fixed and agreed upon in advance, in accordance with the interests of the wider extended family (Lee et al., 1994). It may be the case, however, that gendered expectations have changed as a result of socio-cultural and demographic developments. The second research question is therefore:

Question 2: How do the determinants of economic support vary between daughters and sons?

Following the aforementioned studies, I assume that we can assess the lingering impact of gendered norms and expectations by looking at the impact of marital status, migration and grandchild care on the likelihood and level of economic support from daughters and sons.

In the traditional perspective, marriage is expected to be negatively related to daughters' remittances, since married daughters are supposed to support their husband's family. Young, unmarried women on the other hand are expected to contribute to the parental household, particularly when they engage in migrant labor (Greenhalgh, 1985; H. Zhang, 2007). Marriage reduces their (financial) independence, and therewith their ability to support their natural parents. For sons on the other hand there is no expectation that support will decline with marriage. If there is indeed still a gendered division of intergenerational support, we would expect a negative effect of marriage on support from daughters.

Furthermore, migration is expected to result in higher economic support from sons, but not necessarily from daughters. Sons' migration is often the result of a family strategy to maximize and diversify income sources (Fan & Wang, 2002). In line with the corporate group model of family behavior, they are expected to share part of their income gains with the (extended) family (Cong & Silverstein, 2011; Sun, 2002). Moreover, it has been observed that migrant sons provide increased financial transfers in order to free themselves from the traditional obligation of sharing a household with parents (Lee et al., 1994; Xie & Zhu, 2009). Migration by daughters, on the other hand, is often the result of patrilocal residence after marriage, which does not necessarily lead to increased transfers (Cong & Silverstein, 2011). It must be remembered, however, that labor migration by rural women has increased strongly since the mid-1990s. It is likely that this has reduced gender differences in economic support to parents (Chiang et al., 2015).

Finally, economic support to parents may be provided in compensation for services that parents provide to their adult children. Because of the absence of formal childcare

facilities, it is common for grandparents to care for grandchildren in China. In some cases young children grow up with their grandparent while the middle generation works elsewhere: the so-called 'skipped household' (Silverstein et al., 2006). Greenhalgh (1985) suggested that daughters are more likely to 'reward' their parents for such services, a finding that has been confirmed by other studies (Song et al., 2012; H. Q. Yang, 1996). Although parents provide care for their sons' children as well, there is no expectation of immediate reciprocation: the service is "rendered invisible by its taken-for-grantedness" (Ashwin, Tartakovskaya, Ilyina, & Lytkina, 2013, p. 415).

METHODS

Data and Sample

All analyses were based on data derived from the first wave of CHARLS, which was conducted in 2011-2012 and became publicly available in 2013. CHARLS is part of a (largely) harmonized family of surveys modeled on the American Health and Retirement Study (HRS). Data were collected using computer-assisted face-to-face interviews, with extensive quality checks and follow-ups. The rural response rate was 94.15 percent (Zhao, Strauss, et al., 2013).

CHARLS provides a unique opportunity to study intergenerational support between older parents and their adult children. It provides a representative sample of individuals aged 45 and above, who were asked for information on topics such as family situation, health status, employment and income. Moreover, respondents provided detailed demographic information on each of their children, including the economic transfers they provided in the past year. Because this study focuses on child-level determinants of economic support, I restructured the dataset so as to make the children the unit of analysis.

The analytical sample only includes adult, non-coresident children whose parents lived in a rural area at the time of the survey (for more details, see Table 5 and Table 6). Because of the well-known difficulties in measuring economic transfers between members of the same household, CHARLS – like many other surveys – measured

economic support from non-coresident children only. Since sons are more likely to coreside with parents, this means that daughters were somewhat overrepresented in the sample (54 percent). Most sampled children were born before the fertility reduction policy (their average age was 38 years), and more than half of them have three or more siblings. I removed 64 children that reported unusually high remittances, which may have been related to the purchase of assets or housing rather than income support. A sensitivity analysis (presented in Appendix Table 11) showed that running the full model including the extreme values would not affect the direction or significance of the results. The total analytical sample consisted of 12,389 adult children, who were linked to 4,687 parental households.

A number of variables contained missing or unknown values, the highest being child income category (21.3 percent) and child age (4.2 percent). I therefore applied multiple imputation using chained equations. Because the degree of missingness is relatively low, it is unlikely that imputation had a substantial impact on the results, and further analysis (available upon request) showed that findings based on complete case analysis were highly similar to the ones presented here.

Measures and Descriptives

The dependent variable was the economic support (remittance) that a child provided to the parental household in the year prior to the survey. CHARLS provides detailed information on the amount of money and in-kind support (in Chinese Yuan (CNY)) parents received from each non-coresident child, either on special occasions such as festivals or at regular intervals. These figures were combined to compute the total value of economic support each child provided in the previous year. In addition to the remittance amount, a dichotomous variable "propensity to remit" was computed, which equaled 1 if any support was provided and 0 otherwise. Descriptive statistics (see Table 5) show that the average amount of support per child was CNY 492, which equals current USD 52 or 20 percent of the official rural poverty line at the time of the survey. Moreover, remittances are highly correlated amongst siblings, particularly amongst sons. This suggests that transfers are coordinated –or at least relatively equally distributed– within families.

Table 5**:** *Descriptive statistics for the dependent variable, by gender*

	Daughter	Son	Total	*p*-value
Any remittance in previous year (%)	53.88	54.70	54.26	.801
Remittance amount (CNY)	413.1	583.9	491.6	.000
Remittance amount (S.D.)	1417.7	1078.8	1248.7	
Intra-class correlation	.60	.50	.46	
N (individuals)	6,719	5,670	12,389	
N (parent households)	3,808	3,215	4,687	

Note: Based on the imputed sample (m=10), after removing extreme values. Weighted percentages and means, unweighted N. *p* values refer to a Two-part model regression of remittances on gender, as described in "Analytical Approach". CNY: Chinese Yuan. S.D.: Standard deviation.

The key variables of interest were marriage status, migration status and receipt of grandchild care. Marriage status was represented by a dummy variable comparing married children to those that were never married, widowed or divorced. The large majority (90.3 percent) were married (see Table 6). Migration status was divided into three categories, indicating the location of children relative to their parents: *in the same village* (reference category), *outside the village but in the same region* and *in another region*. Table 6 shows that most daughters had moved away from the parental village. For sons, 'in the same village' was the most common category, whereas for daughters it was 'in the same region'. Receipt of grandchild care was represented by a dummy variable indicating whether the parent(s) provided care for one or more of the child's minor children in the past year. Sons were much more likely to receive this type of assistance from their parents than daughters.

Table 6**:** *Descriptive statistics for independent variables, by gender*

	Daughter %	Son %	Total %	N	*p*-value
Child marital status					
Not married	6.86	12.87	9.62	1,189	.000
Married	93.14	87.13	90.38	11,200	
Child location					
Same village	22.58	51.82	36.01	4,287	
Same region	51.93	15.16	35.04	4,363	.000
Different region	25.49	33.02	28.95	3,739	
Receives grandchild care					
No grandchild care	96.26	84.98	91.08	11,242	.000
Receives grandchild care	3.74	15.02	8.92	1,147	
Child highest education					
Up to primary school	60.32	44.24	52.94	6,572	
Middle school or higher	35.27	48.67	41.42	5,135	.000
College or higher	4.41	7.09	5.64	682	
Child and spouse income level					
Very low	28.92	27.74	28.38	3,443	
Low	34.46	35.80	35.07	4,458	.234
Medium	29.74	29.00	29.40	3,647	
High	6.88	7.46	7.15	841	
Child's number of siblings					
No siblings	1.40	2.81	2.05	243	
One sibling	16.74	18.75	17.66	2,185	.000
Two siblings	23.90	24.59	24.22	3,043	
Three or more siblings	57.96	53.86	56.08	6,918	
Older brother					
Has no older brother	56.53	55.37	56.00	6,981	.089
Has older brother	43.47	44.63	44.00	5,408	
Child age (in years)					
Mean	37.4	38.8	38.0	12,389	.000
Parent(s) living arrangement					
Independent	52.03	71.16	60.81	7,514	.000
Coreside with sibling	47.97	28.84	39.19	4,875	

Parent(s) marital status					
Married	71.46	70.65	71.09	8,916	
Single father	8.69	8.85	8.77	1,061	.575
Single mother	19.84	20.50	20.15	2,412	
Parent(s) care need					
No parent has care need	70.68	69.75	70.25	8,625	.270
Any parent has care need	29.32	30.25	29.75	3,764	
Parent(s) pension					
Do not receive pension	85.72	85.36	85.55	10,618	.423
Receive pension	14.28	14.64	14.45	1,771	
Parent(s) currently working					
No parent is working	27.02	29.66	28.23	3,373	.002
Any parent is working	72.98	70.34	71.77	9,016	
Age of oldest parent					
45-60	29.55	24.56	27.26	3,408	
60-69	35.51	35.42	35.47	4,421	.000
70-79	25.52	29.76	27.47	3,356	
80+	9.42	10.26	9.81	1,204	

Note: Based on the imputed sample (m=10). Weighted percentages and means, unweighted N. *p* values refer to a simple logistic regression of the respective variable on gender.

Previous studies have shown that intergenerational support is related to parental need (Guo, Chi, et al., 2009) as well as socio-economic status and resources of children (Sun, 2002). Each model controlled for the child's education and income level. Income level refers to the annual combined income of the child and his or her spouse (if married), divided into four categories named *very low* (below CNY 10,000 – reference category) *low* (CNY 10,000-20,000), *medium* (CNY 20,000-50,000) and *high* (above CNY 50,000). I also control for the number of siblings, which is expected to exert a negative impact on the amount of support provided by each child (Zimmer & Kwong, 2003). Finally, I include a dummy variable indicating whether the child has an older brother. In line with the traditional perspective we would expect this to reduce the amount of support provided, particularly for daughters.

In addition to the child-level variables, I controlled for a number of characteristics of the parent(s); notably marital status (*couple*, *single mother*, or *single father*), age bracket, whether the parent(s) coresided with one or more siblings, whether any parent had a care need, and whether any parent was working. Indicators of parental income or wealth were avoided due to concerns about endogeneity: remittances make up a large part of parental income and are likely to reduce incentives to work.

Analytical Approach

The modeling of remittance data is generally complicated by a highly positive skew and a large cluster of observations with a value of zero. Table 5 shows that more than half of the children included in the sample did not provide their parents with any economic support. Two-part models (TPMs) have been used extensively in situations where the dependent variable is highly skewed and semi-continuous (for more information, see Belotti, Deb, Manning, & Norton, 2015; Buntin & Zaslavsky, 2004). In this study, the first part of the TPM estimates the probability that $y > 0$ (the child provided any support in the past year), while the second part models the distribution of $y \mid y > 0$ (the monetary amount for those that provided a transfer). In addition to the results from the two parts, which can be estimated using conventional regression models, average marginal effects (AMEs) were computed representing the average change in $E\ (y \mid x)$ resulting from a unit change in the respective covariates. The AMEs take into account both parts of the model, and can thus be interpreted as the average effect over the full sample[14]. All analyses were implemented in Stata 14 (StataCorp, 2015) using the *Twopm* package (Belotti et al., 2015). Inspection of model fit and residuals showed that a Generalized Linear Model (GLM) with a gamma distribution and a log link was the preferred choice for modeling the second part. Compared to log-transformed models, GLMs are generally more robust and have the additional

[14] Marginal effects for factor variables are typically referred to as incremental effects, since they reflect the average change in the predicted value relative to the baseline category. Predictions for each category are calculated using the rule

$$\hat{y}_i \mid x_i = (\hat{p}_i \mid x_i) * (\hat{y}_i \mid y_i > 0, x_i)$$

where $\hat{y}_i \mid x_i$ is the combined predicted outcome and $\hat{p}_i | x_i$ is the predicted probability that $y_i > 0$.

advantage that marginal effects and predicted probabilities are calculated in levels rather than in logs, thus eliminating the need for retransformation (Buntin & Zaslavsky, 2004). Because remittances tend to correlate amongst siblings, standard errors were clustered by household of origin.

To check the robustness of the findings, additional analyses were conducted looking at financial support only, by child age cohort (below 30, 30-44 and 45+) and including additional control variables (sibling gender, parents' living standard, parents' assets, regional fixed effects etc.). The results (available upon request) show the findings relating to the research questions and hypotheses were substantively similar in each of these cases.

RESULTS

Table 7 shows the TPM results for the full sample. The exponentiated coefficients for the first part (logistic) can be interpreted as odds ratios, and those for the second part (log-gamma) as the multiplicative change in the response variable resulting from a one-unit change in the respective predictor. In interpreting the results from the second part, it should be remembered that they apply to children with positive remittances only. In order to interpret the effect on the entire population sample, we need to look at the AMEs.

The first research question related to the overall difference in remittances by gender. Table 7 shows that, after controlling for various child- and parent-level variables, sons provided higher remittances on average, leading to an AME of CNY 160. This difference was not driven by a higher propensity to remit (Part I) but rather by the amounts provided by sons, which exceeded daughters' contributions by 39 percent on average (Part II).

Table 7**:** *Two-part model predicting remittances to parents: all children*

	Part I: Logistic		Part II: GLM		Av. Marginal Effect	
	OR	*SE*	*Exp. B*	*SE*	*CNY*	*SE*
Child characteristics:						
Son	0.97	0.05	1.39***	0.06	160.18***	27.61
Married	1.12	0.09	0.63***	0.04	-247.92***	58.37
Location (ref.: same village)						
Same region	1.32***	0.08	1.14*	0.06	114.80***	25.70
Different region	1.43***	0.09	1.57***	0.09	319.72***	33.15
Receives grandchild care	1.43***	0.11	1.53***	0.09	382.89***	56.37
Education (ref.: up to primary)						
Middle school or higher	0.97	0.05	1.23***	0.05	94.48***	25.45
College or higher	0.91	0.10	1.55***	0.12	215.06***	58.46
Income level (ref.: very low)						
Low	1.56***	0.10	1.30***	0.08	181.21***	24.06
Medium	2.05***	0.14	1.61***	0.10	374.59***	31.79
High	3.10***	0.36	2.43***	0.22	888.96***	92.14
Siblings (ref.: three or more)						
No siblings	0.56***	0.09	1.46**	0.19	29.87	83.40
One sibling	0.70***	0.06	1.34***	0.09	56.77	41.90
Two siblings	0.86	0.06	1.16*	0.07	36.37	35.26
Has older brother	1.05	0.05	0.95	0.03	-14.70	21.97
Parents characteristics:						
Coreside with sibling	0.81**	0.05	0.99	0.05	-61.81*	30.96
Marital status (ref: couple)						
Single father	1.22	0.14	0.91	0.08	1.77	55.23
Single mother	1.39***	0.13	0.89	0.07	23.31	45.98
Any parent has care need	1.04	0.08	0.99	0.06	4.87	35.80
Receive pension	0.82*	0.08	1.19*	0.09	35.93	48.09
Any parent is working	1.04	0.10	0.90	0.06	-43.58	43.68
Age of parent (ref: 45-60)						
60-69	1.35***	0.11	0.75***	0.05	-67.20	42.02
70-79	1.85***	0.19	0.63***	0.05	-76.87	49.50
80+	2.08***	0.31	0.66***	0.08	-26.69	73.26
Observations	12,389		5,672		12,389	

Note: OR: Odds Ratio. Exp.: Exponentiated. SE: Standard Error. CNY: Chinese Yuan.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Furthermore, it can be seen that migration had a strongly positive effect on both the propensity to remit and the amount provided, particularly when children moved to a different region. Unmarried children provided higher amounts than married children, as indicated by the negative AME of CNY 248. It is important to keep in mind, however, that the sample only included non-coresident unmarried children. Support from unmarried children that have not yet left the parental home is likely to be lower. Finally, there was a strongly positive relation between the receipt of grandchild care and economic support to parents.

The control variables largely had the expected direction, with child income being a particularly strong predictor. The parent-level indicators appeared to play a less important role overall, although it can be seen that parents who coresided with a sibling received slightly less support from non-coresident children. Older parent cohorts were more likely to receive remittances, but received lower amounts on average. Moreover, single parents were more likely to receive support than couples (Part I), although the effect was only significant for single mothers.

Table 8**:** *Two-part model predicting remittances to parents: by child gender (abbreviated table)*

	Daughters			Sons		
	Part I Logistic *OR*	Part II: GLM *Exp. B*	AME *CNY*	Part I Logistic *OR*	Part II: GLM *Exp. B*	AME *CNY*
Child characteristics:						
Married	1.03	0.51***	-366.65***	1.15	0.72***	-175.95*
Location (ref.: same village)						
Same region	1.28***	1.15	93.07***	1.30**	1.22*	163.95***
Different region	1.24*	1.53***	213.20***	1.65***	1.65***	453.46***
Receives grandchild care	1.48**	1.68***	404.26***	1.49***	1.49***	433.60***
Observations	6,719	3,091	6,719	5,670	2,588	5,670

Note: Control variables (same as in Table 7) and standard errors not displayed. For the full results see Appendix Table 9 (Daughters) and Appendix Table 10 (Sons). OR: Odds Ratio. Exp.: Exponentiated. AME: Combined average marginal effect. CNY: Chinese Yuan.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In order to analyze how the determinants of support vary by gender (Question 2) separate analyses were conducted for sons and daughters. Table 8 shows that daughters and sons' support generally responded in similar ways to the three main variables of interest, although the magnitude of the effects differed substantially. To facilitate the substantive interpretation of results, combined average predicted probabilities (by gender) are plotted in Figure 7.

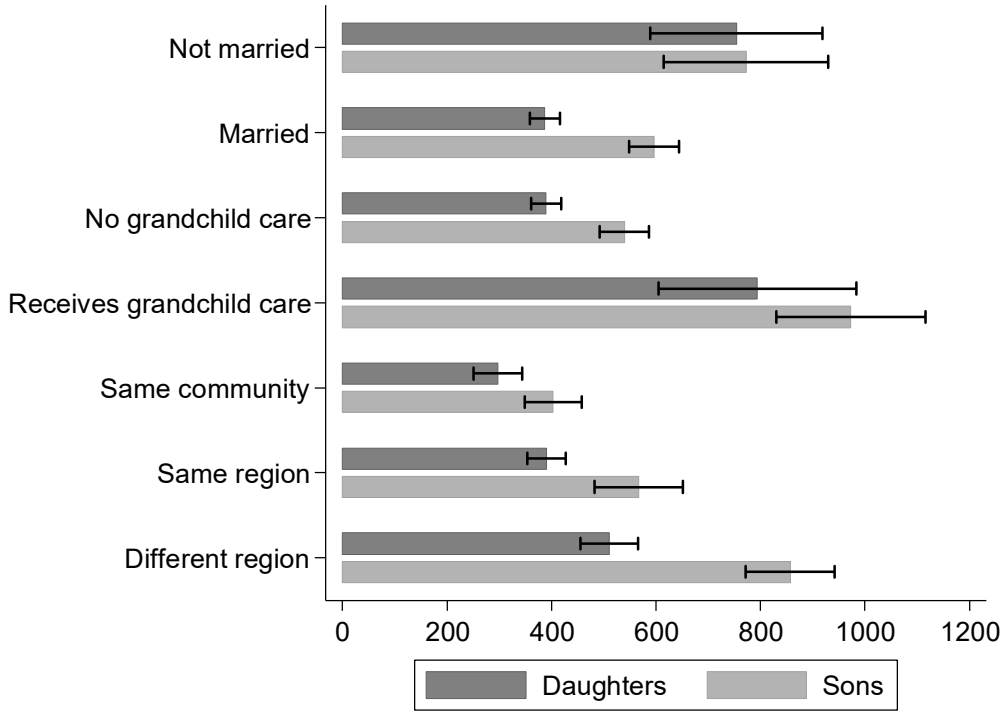

Figure 7. TPM average predicted remittances, by gender (CNY)

Combined average predicted remittances ($E\ (y \mid x)$) from gender-separated models (Table 8). Spiked lines represent 95 percent confidence intervals. CNY: Chinese Yuan.

Filial norms were assumed to apply to sons and unmarried daughters, but less so to married daughters, who traditionally belong to their husband's family. Figure 7 supports this hypothesis. While unmarried sons and unmarried daughters provide similarly high amounts of support to parents, married daughters provide substantially less than married sons. The difference was driven by lower amounts rather than by a lower likelihood of support (see Table 8). Support from married daughters was far from negligible however, and amounted to about CNY 400 a year on average. The effect of migration, particularly of moving to another region, was somewhat stronger

for sons. With respect to grandchild care, the results are rather similar for sons and daughters: both gave more support if parents cared for their children in the past year. Grandchild care had a strong impact in both parts on the model, leading to an AME of CNY 404 for daughters and CNY 434 for sons. This suggests that both sons and daughters engaged in short-term time-for-money exchange with their parents.

DISCUSSION

This paper looked at gender differences in child-to-parent remittances amongst a representative sample of rural Chinese families. The traditional Chinese family model, as described by Greenhalgh (1985) and others, suggests that the provision of financial and material support to parents varies systematically gender. In line with the age-old tradition of filial piety, (migrant) sons should provide for their parents materially, not as a matter of reciprocity but as a moral obligation. Support from (married) daughters, on the other hand, is expected to be lower and more likely to be part of a short-term exchange relationship. However, given the profound social changes that have occurred in the past decades, it is doubtful whether this is still the case.

It was found that although sons and daughters had about the same probability of providing support, the amount provided by sons was significantly higher. This difference is likely to reflect traditional norms and expectations, although part of it could also be due to gender differences in unobservable factors, such as command over household resources. These findings stand in contrast to the situation in urban China, where daughters have been found to provide more support than sons (Xie & Zhu, 2009; Zhu, 2016).

The findings also suggest that marriage was an important predictor of economic support, with unmarried children providing higher amounts of support on average. The fact that married children provided lower amounts may reflect the high cost of raising a family in modern China, where the education of children often takes preference over supporting parents. The effect of marriage varied according to the gender of the child, with married women reducing their support more than married men. This suggests that patriarchal traditions that direct women's support to their husbands' family are

still prevalent in rural China. The support provided by married women is substantial however, a fact that is not always appreciated in the relevant literature.

In line with existing literature, it was found that migrant children tend to provide more support to their parents, even after controlling for the child's income level. Contrary to the findings of Guo, Chi and Silverstein (2009), migration had a positive effect on support from both daughters and sons, although the effect was somewhat stronger for sons. The migration of daughters was thus not only due to patrilocal marriage traditions, but also affected their capacity and propensity to remit.

Previous research also suggested that daughters' support might be more responsive to the receipt of grandchild care (Song et al., 2012; H. Q. Yang, 1996). I found no such gender difference in short-term reciprocity: grandparents caring for grandchildren had a strong effect on support provided by both sons and daughters. Particularly in the case of skipped households, this suggests that support provided to parents is at least partially meant to provide for the upbringing of children. It also implies that intergenerational support by sons is no longer seen as a matter of obligation, but contains a strong element of short-term reciprocity. This is in line with the findings of Cong & Silverstein (2011, 2012a), Lei Lei (2013) and others.

Overall, findings suggest that the traditional model, centered on the strongly gendered norm of filial piety, is no longer an accurate description of the intergenerational support system in rural China. Although notable gender differences persist, overall economic support from daughters is remarkably similar to that of sons. The reasons for this shift relate to a wider trend of increasing financial independence and empowerment of rural women (Chiang et al., 2015; Shi, 2009). Reduced family sizes also play an important role, since they imply that younger parent cohorts increasingly need to rely on daughters as well as sons. We thus need alternative theoretical frameworks to analyze the current practice of intergenerational support in China. Croll's (2006) description of a renegotiated intergenerational contract based on mutual reciprocity provides a good starting point.

The results should be interpreted in the light of a number of limitations. First of all, the non-measurement of economic support by coresident children may introduce

selection effects. Parents coresiding with an adult child are likely to benefit economically from this arrangement, even if no money changes hands. Coresidence is still highly gendered in China, and it could be the case that the most 'filial' men choose to live with their parents. Furthermore, self-reported remittances may be subject to measurement error. Confirmation bias may have led some parents to over-report support provided by sons or under-report support by daughters, in line with their cultural expectations.

These limitations notwithstanding, the study advances our understanding of gender differences in economic support to parents as well as of the mechanisms underlying such differences. The results suggest that both sons and daughters are a major source of support for aged parents, contrary to some alarming reports about the breakdown of the intergenerational support system in China. The substantial amount of economic support provided by daughters suggests that investing in sons rather than daughters may no longer be a rational preference for Chinese parents, particularly since daughters are also more likely to provide emotional support and care (J. Liu, 2014; Shi, 2009). In the long run, this is likely to increase gender equality in education and reduce the sex-imbalance at birth. At the same time, it must be kept in mind that parents who are now approaching retirement have fewer children on average, and are thus likely to receive lower aggregate support. More research is needed on how filial support relates to birth cohort and to parent-child relationships over the life course.

APPENDIX CHAPTER 3

Table 9**:** *Two-part model results (full) for daughters*

	Part I: Logistic		Part II: GLM		Av. Marginal Effect	
	OR	*SE*	*Exp. B*	*SE*	*CNY*	*SE*
Child characteristics:						
Married	1.03	0.12	0.51***	0.05	-366.65***	85.29
Location (ref.: same village)						
Same region	1.28***	0.10	1.15	0.08	93.07***	27.07
Different region	1.24*	0.11	1.53***	0.13	213.20***	37.25
Receives grandchild care	1.48**	0.22	1.68***	0.18	404.26***	97.22
Education (ref.: up to primary)						
Middle school or higher	0.89	0.06	1.31***	0.07	82.97**	27.58
College or higher	0.97	0.14	1.44***	0.14	153.18*	61.53
Income level (ref.: very low)						
Low	1.55***	0.13	1.23**	0.09	129.31***	25.43
Medium	2.11***	0.19	1.62***	0.13	317.34***	33.58
High	2.80***	0.41	2.78***	0.35	821.96***	118.31
Siblings (ref.: three or more)						
No siblings	0.72	0.17	1.52*	0.27	114.13	114.13
One sibling	0.67***	0.07	1.30**	0.11	18.33	41.98
Two siblings	0.86	0.08	1.09	0.08	3.81	34.25
Has older brother	0.94	0.06	0.93	0.05	-40.79	25.57
Parents characteristics:						
Coreside with sibling	0.80**	0.06	1.00	0.06	-50.18	29.47
Marital status (ref: couple)						
Single father	1.22	0.17	0.86	0.09	-18.31	52.07
Single mother	1.24*	0.14	0.82*	0.07	-34.56	39.58
Any parent has care need	1.07	0.09	0.94	0.06	-11.52	33.14
Receive pension	0.87	0.10	1.22*	0.10	52.91	46.12
Any parent is working	1.10	0.12	1.00	0.09	19.18	41.34
Age of oldest parent (ref: 45-60)						
60-69	1.35**	0.13	0.75***	0.06	-57.19	41.00
70-79	1.62***	0.20	0.62***	0.06	-94.18	48.16
80+	1.73**	0.31	0.67**	0.09	-55.30	65.71
Observations	6,719		3,091		6,719	

Note: OR: Odds Ratio. Exp.: Exponentiated. SE: Standard Error. CNY: Chinese Yuan.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 10**:** *Two-part model results (full) for sons*

	Part I: Logistic		Part II: GLM		Av. Marginal Effect	
	OR	*SE*	*Exp. B*	*SE*	*CNY*	*SE*
Child characteristics:						
Married	1.15	0.12	0.72***	0.07	-175.95*	82.68
Location (ref.: same village)						
Same region	1.30**	0.12	1.22*	0.10	163.95***	48.92
Different region	1.65***	0.13	1.65***	0.12	453.46***	51.28
Receives grandchild care	1.49***	0.14	1.49***	0.11	433.60***	76.02
Education (ref.: up to primary)						
Middle school or higher	1.07	0.08	1.12	0.07	83.07	43.17
College or higher	0.88	0.13	1.56***	0.17	248.85**	96.16
Income level (ref.: very low)						
Low	1.55***	0.15	1.36**	0.13	239.69***	42.57
Medium	1.99***	0.21	1.57***	0.15	416.30***	54.10
High	3.55***	0.61	2.08***	0.26	919.48***	128.78
Siblings (ref.: three or more)						
No siblings	0.51**	0.11	1.49*	0.28	21.98	130.82
One sibling	0.77*	0.09	1.45***	0.14	151.17*	72.37
Two siblings	0.88	0.09	1.23*	0.10	85.26	58.44
Has older brother	1.20***	0.06	0.96	0.05	32.31	34.90
Parents characteristics:						
Coreside with sibling	0.81*	0.07	0.98	0.08	-77.69	53.07
Marital status (ref: couple)						
Single father	1.21	0.18	0.95	0.12	30.75	90.08
Single mother	1.59***	0.18	0.95	0.09	109.73	77.04
Any parent has care need	1.00	0.09	1.04	0.09	26.15	59.14
Receive pension	0.76*	0.09	1.15	0.12	1.60	73.57
Any parent is working	0.99	0.11	0.81*	0.07	-140.83*	70.66
Age of oldest parent (ref: 45-60)						
60-69	1.40**	0.15	0.80*	0.08	-24.60	68.37
70-79	2.24***	0.30	0.70**	0.08	20.98	81.17
80+	2.72***	0.50	0.71*	0.12	80.88	126.84
Observations	5,670			2,588		5,670

Note: OR: Odds Ratio. Exp.: Exponentiated. SE: Standard Error. CNY: Chinese Yuan.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 11**:** *Two-part model results including extreme remittance values*

	Part I: Logistic		Part II: GLM		Av. Marginal Effect	
	OR	*SE*	*Exp. B*	*SE*	*CNY*	*SE*
Child characteristics:						
Son	0.97	0.05	1.58***	0.11	290.41***	52.56
Married	1.12	0.09	0.59***	0.05	-384.40***	96.05
Location (ref.: same village)						
Same region	1.32***	0.08	1.06	0.08	107.78*	43.92
Different region	1.44***	0.09	1.49***	0.12	386.11***	55.70
Receives grandchild care	1.43***	0.11	1.48***	0.12	459.72***	85.48
Education (ref.: up to primary)						
Middle school or higher	0.97	0.05	1.22**	0.08	117.04**	42.49
College or higher	0.94	0.10	1.57***	0.20	297.43**	112.73
Income level (ref.: very low)						
Low	1.55***	0.11	1.28***	0.09	194.20***	29.99
Medium	2.02***	0.15	1.85***	0.13	507.85***	47.54
High	3.11***	0.34	4.06***	0.64	1831.71***	315.93
Siblings (ref.: three or more)						
No siblings	0.56***	0.09	1.45*	0.22	45.77	119.66
One sibling	0.70***	0.06	1.32**	0.12	67.69	65.29
Two siblings	0.86*	0.06	1.19*	0.10	65.65	62.83
Has older brother	1.04	0.05	0.95	0.05	-20.76	38.17
Parents characteristics:						
Coreside with sibling	0.80***	0.05	0.96	0.07	-95.71	49.94
Marital status (ref: couple)						
Single father	1.22	0.14	0.93	0.10	16.79	84.60
Single mother	1.40***	0.13	0.96	0.09	79.04	77.88
Any parent has care need	1.04	0.07	1.02	0.07	22.57	55.25
Receive pension	0.82*	0.08	1.20	0.11	52.07	73.92
Any parent is working	1.05	0.10	0.93	0.08	-33.95	65.27
Age of oldest parent (ref: 45-60)						
60-69	1.35***	0.11	0.76**	0.07	-83.52	69.88
70-79	1.83***	0.19	0.60***	0.06	-147.49	81.44
80+	2.07***	0.31	0.57***	0.08	-149.43	97.96
Observations	12,453		5,748		12,453	

Note: This table replicates the analysis presented in Table 7, including the 64 observations that were otherwise excluded because of extreme values on the dependent variable (remittances). OR: Odds Ratio. Exp.: Exponentiated. SE: Standard Error. CNY: Chinese Yuan.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

CHAPTER 4

Intergenerational Contact in Chinese Families: Structural and Cultural Explanations

SUMMARY

While the determinants of intergenerational contact have been well documented in Western countries, we know virtually nothing about the situation in China, a country that has recently experienced unprecedented socio-economic and demographic change. This study analyzed the frequency of 1) visits and 2) other contact (phone, text message etc.) in a representative sample of 16,715 adult child-parent dyads; focusing in particular on the role of migration as well as children's gender, marital status and education level. Adult children generally maintained intensive social relations with parents, although distance was a major barrier to face-to-face contact. Sons visited more often than daughters, but daughters were more likely to stay in touch by other means. Moreover, the strength of parent-daughter ties was strongly dependent on education level. These findings suggest that women's empowerment and the spread of mobile technology have created new opportunities for intergenerational solidarity.

"Go home to visit the family every so often
Even if all you do is help mother wash the chopsticks and dishes
The elders don't need you to contribute much
In our busy lives, it is not easy to reunite the family"
(Lyrics of popular Chinese song Chang Hui Jia Kan Kan ["Come back home often"])

INTRODUCTION

China's recently revised Elderly Rights Law attracted international attention by requiring children to pay 'regular visits' to their aged parents (Hatton, 2013). Merely a few decades ago such a requirement would have been considered preposterous: virtually all parents lived in multi-generational households, and norms of *filial piety* ensured strong lifelong ties with sons in particular (Whyte, 2003). In recent years, however, mass internal migration has increased geographic distance between generations, and rapid socio-economic change has raised concerns about the erosion of traditional Confucian family values. The perceived decline in intergenerational family solidarity and the high prevalence of loneliness and depression among 'left-behind' elders are important issues in the Chinese public and private discourse (Silverstein et al., 2006; K. Yang & Victor, 2008).

Against this backdrop, a number of studies have addressed the current state of the family support system in China (e.g. Guo et al., 2012; Song et al., 2012), but none of them focused on social contact specifically. Social contact has a number of advantages as an indicator of the strength of family ties or *intergenerational solidarity* (Bengtson & Roberts, 1991). First, social contact (or associative solidarity) can be assumed to be an important element of parent-child relations throughout the life course, contrary to other indicators such as caregiving, which are generally needs-based. Second, contact is an objective behavioral indicator that can be measured in a relatively reliable way (Steinbach, 2013). Third, frequent social interaction is strongly correlated with the receipt of care and other types of support from children at the time of need (Lye, 1996). The latter is particularly important in the Chinese context, because public assistance for older people is often unavailable or insufficient.

Aside from these considerations, studying intergenerational contact is important because it is of great intrinsic value to families. Particularly in Confucian societies such as China, where filial piety and family harmony are highly treasured, keeping in touch with adult children is key for the happiness and well-being of older parents (Shi, 2009).

The purpose of this study was therefore to assess the key determinants of intergenerational contact frequency in China. Thus far, intergenerational contact has mainly been studied in Western countries, whose family traditions, cultural norms and socio-economic conditions diverge widely from those observed in China. The following sections therefore shortly describe some key features of Chinese families and develop hypotheses about their implications for intergenerational contact. For more in-depth information on Chinese kinship norms and traditions, see Chu & Yu (2010) or Whyte (2003).

THE DETERMINANTS OF INTERGENERATIONAL CONTACT IN CHINA

In analyzing social contact, it is useful to distinguish between structural and cultural explanations (Kalmijn, 2006). Structural explanations relate to the opportunities and barriers to contact, the most important being geographic proximity. Cultural explanations, on the other hand, refer to the preferences and social norms that are reflected in contact behavior. The present study focuses particularly on migration as a structural determinant of parent-child contact and gender, marriage and education level as cultural explanations.

Structural explanations

China has seen a massive growth in internal migration in recent decades, combined with a decline of the traditional multigenerational household. As a result, most older parents now live alone or with a spouse only (Zhao, Park, et al., 2013). Modernisation theory (Goode, 1963) suggests that intergenerational ties inevitably weaken as the physical distance between family members increases. Similar arguments can be heard in the discourse on 'left behind' elders in rural China (see e.g. Hatton, 2013).

In evaluating the impact of migration on intergenerational ties it is important, however, to distinguish between visits and other types of contact. Because of China's sheer size, it can be expected that the number of family visits will reduce substantially with geographic distance. In addition to the cost and difficulty involved in travelling, most Chinese workers can take extended holidays only during the Chinese New Year. Previous research has generally shown, however, that these structural constraints do not preclude the maintenance of strong and supportive ties between migrant children and their parents (Fan & Wang, 2002; Song et al., 2012). Communication technology is likely play an important role in this, because it makes interaction less dependent on physical proximity (Litwak & Kulis, 1987). In recent years, phone access has become almost universal in China: over 90 percent of parents covered in this study had either a mobile phone or a landline connection at home.

Following this reasoning, I expect higher geographic distance to lead to fewer visits (Hypothesis 1a) but also to an increase in other types of contact (Hypothesis 1b) as migrants seek to maintain close ties to their family and location of origin.

Cultural explanations

Preferences for social contact are driven by culture-specific family values and expectations (Kalmijn, 2006). For example, in the Western context, daughters have been found to maintain more intensive contact with parents than sons, a finding that is typically explained by gendered family norms that assign women the role of kin-keepers (Lye, 1996). Chinese family norms on the other hand attach particular importance to parent-son relationships. Chinese parents also spend more time and resources on male children and are more likely to provide grandchild care and other services to their adult sons (Cong & Silverstein, 2012a). I therefore expect Chinese parents to have more contact with sons than with daughters (Hypothesis 2a).

This hypothesis must be conditioned in a number of ways however. First, I would expect gender differences to depend on marital status. Chinese families are mostly patrilocal: a married daughter joins her husbands' family, and is expected to follow her husband and parents-in-law (Whyte, 2003). Greenhalgh (1985) famously described Chinese daughters as 'temporary members' of their native families. Although

daughters may want to stay in touch with their parents, a married couple has to divide its time and attention between the parents of both the wife and the husband. In the Chinese context, there is a strong presumption that the husband's parents will be in a privileged position. This suggests that marriage has a negative effect on daughter-parent ties (Hypothesis 2b).

Second, it must be considered that traditional norms and practices have been subject to change in China. A number of ethnographic studies have observed an erosion of gendered norms of filial piety and patrilocality and a strengthening of ties between married daughters and their natal parents. The increased importance of parent-daughter relations has been related to smaller family sizes, women's economic empowerment and an increased emphasis on affection and care in parent-child relationships (Judd, 1989; Shi, 2009; Yan, 2003, 2016; W. Zhang, 2009). This trend is not universal, however, and parents (in-law) continue to have different expectations from daughters and sons (Miller, 2004). I assume that women's ability to maintain close relationships with their natal parents is a function of their education level, for two reasons. First, education can be an emancipating factor, and adherence to traditional patriarchal norms is generally stronger amongst the less educated (Shi, 2009). Second, women with more education have higher earning power and are thus in a better bargaining position vis-à-vis their husband and parents-in-law (W. Zhang, 2009). For daughters, more education is thus expected to lead to increased contact with parents, while for sons we would expect high levels of contact regardless of their education level (Hypothesis 2c).

In addition to the abovementioned child-level explanations, existing literature suggests that contact is at least partially dependent on the needs and resources of parents. For example, we would expect single parents (most of whom were widowed) and non-coresident parents to have more contact with children, because they are likely to have a higher need for companionship. Moreover, it could be expected that the traditional patterns described above are more prevalent in rural than in urban China. Traditional norms, including son preference, are generally stronger in rural areas (Murphy, Tao, & Lu, 2011). All these factors will be controlled for in the regression analyses, as described below.

METHOD

Data and sample

All analyses were based on data derived from the National Baseline of the China Health and Retirement Longitudinal Study (CHARLS), which was conducted in 2011-2012. CHARLS is part of a family of surveys modeled on the American Health and Retirement Study (HRS), and provides a unique opportunity to study intergenerational contact in a nationally representative sample of Chinese families. It covers individuals aged 45 or above and their spouses, who were asked for information on topics such as family, health status, employment and income. Data were collected using computer-assisted face-to-face interviews, with extensive quality checks and follow-ups. The overall response rate was 80.51 percent (Zhao, Strauss, et al., 2013). CHARLS also provides a detailed demographic profile for each of the respondents' children, as well as information on face-to-face and other types of contact between respondents and each of their non-coresident children.

For the purpose of this study, I used the respondents' non-coresident children as the unit of analysis. The total analytical sample consisted of 16,715 non-coresident adult children, who were linked to 7,064 parental households (the survey respondents), where a parental household consisted of a couple, a single mother or a single father. Please note that contact with children was measured jointly for coresiding couples rather than for each parent individually. Because parents aged 45 and above were observed, my sample covers almost the entire range of adult child-parent dyads. Daughters were somewhat overrepresented (55.6 percent), which is due to sons' higher propensity to coreside with parents.

A number of covariates contained missing or unknown values, the highest being parents' self-rated living-standard (4.1 percent) and child residence (1.3 percent). I therefore applied multiple imputation using chained equations, following the recommendations by Johnson & Young (2011). This procedure created 10 imputed datasets using an imputation model that included all analytical variables as well as a number of auxiliary variables. Pooled estimates were calculated using Stata's *mi* prefix (StataCorp, 2015). Cases that were missing one or more of the dependent variables (N=1,949 or 10.4 percent of the sample) were not used in the analyses, as

recommended by von Hippel (2007). Most of these cases (N=1,859) were missing because their contact frequency was indicated as "other" and could thus not be established. Sensitivity analysis showed that imputed results were highly similar to complete case analysis.

Measures

The dependent variables were derived from the response to the questions "How often do you see [child's name]?" and "How often do you have contact with [child's name] either by phone, text message, mail, or email?" in the household questionnaire. Both questions contained nine possible answer categories ranging from *Almost every day* to *Almost never*. Responses to these questions were provided by the family respondent, who could either be the main respondent, his or her spouse, or another knowledgeable member of the household. Following previous research (e.g. Kalmijn, 2006, 2007) I recoded the nine answer categories for each dependent variable into an approximate number of visits and other contacts per year.

The key independent variables in this study were the child's gender, marital status, education level and geographic distance to parents. *Geographic distance* was defined by the child household's location relative to that of the parents: (1=*in the same community,* 2=*another community in the same region,* 3=*another region in the same province,* 4=*another province* and 5=*abroad.* Table 12 shows that sons were more likely to live in the same community as their parents, but they were also more likely to live in a different province. Daughters were most likely to live in a different community in the same region (in the case of urban residence, this refers to another neighborhood in the same city). *Marital status* was measured using a binary variable (0=*unmarried*, 1=*married*). Unmarried children could be widowed, divorced or never married. Divorce is still relatively uncommon in China, so most unmarried children were never married. *Child education* consisted of three levels: *up to primary school*, *middle school or higher* and *college or higher.* Compared to sons, daughters were more likely to have no or only basic education (46 versus 33 percent) and less likely to have a college degree (9 versus 13 percent).

Table 12**:** *Descriptive statistics for the independent variables, by gender*

	Daughter M (SD)	Son M (SD)	Total M (SD)	*p*-value
Child is married	92.54	84.78	89.10	.000
Child's highest education				
Up to primary school	46.07	32.98	40.27	
Middle school or higher	44.58	53.64	48.60	.000
College or higher	9.35	13.38	11.14	
Child's distance to parent				
In the same community	23.38	44.68	32.83	
In the same region or city	51.33	22.13	38.38	
In the same province	12.85	13.80	13.27	.000
Different province	12.13	19.08	15.21	
Abroad	0.32	0.31	0.31	
Child's number of siblings				
No siblings	3.01	5.01	3.89	
One sibling	19.14	21.86	20.35	.000
Two siblings	23.70	24.47	24.04	
Three or more siblings	54.15	48.66	51.71	
Parent(s) coreside with sibling	46.89	30.80	39.75	.000
Parent(s) marital status				
Couple	72.71	71.79	72.31	
Single father	7.36	7.61	7.47	.445
Single mother	19.93	20.59	20.22	
Parent(s) age bracket				
45-59	28.23	26.13	27.30	
60-69	34.51	33.06	33.87	.000
70-79	27.48	30.06	28.62	
80 and above	9.78	10.76	10.21	
Any parent has care need	26.53	26.24	26.40	.875
Parent(s) living standard				
(Relatively) high	3.14	2.90	3.03	
Average	47.02	48.35	47.61	.446
(Relatively) poor	49.84	48.75	49.36	
Parent(s) live in urban area	42.97	43.40	43.16	.963
Number of observations	9334	7381	16715	

Note: Weighted percentages and means, unweighted N. *p* values refer to a simple logistic regression of the respective variable on gender.

In addition to the abovementioned variables, I the regression models included the child's number of siblings and the parent-level variables age bracket (*45-59*, *60-69*, *70-79* and *80 and above*), self-rated living standard (*relatively high*, *average* or *relatively poor*) and marital status (*couple*, *single mother* or *single father*), as well as three dummy variables indicating whether parent(s) had a need for personal care, coresided with one or more of the child's siblings or resided in an urban area. Finally, because gender differences in contact are likely to be more pronounced in rural areas, I included an interaction effect between child gender and urban origin.

Analytical strategy

I followed Jappens and van Bavel (2016) in modelling contact frequency using a Poisson regression model. Poisson models give infrequent contacts more weight than frequent contacts, as recommended by Kalmijn & de Vries (2009). Moreover, compared to the alternative log-linear model, Poisson models are more robust to heteroscedasticity and eliminate the problem of retransforming the predicted means. I used robust standard errors to avoid the Poisson assumption that the mean is equal to the variance (Cameron & Trivedi, 2009) and to account for non-independence of child-parent dyads from the same household.

In addition to the regular Poisson models, I estimated family fixed effect (FFE) Poisson models, using the *xtpoisson* command in Stata 14 (StataCorp, 2015). FFE models analyze contact frequency as a function of features that vary between siblings, such as gender, education level and geographical distance to parents. They provide a more rigorous test of the hypotheses because they control for all observed and non-observed confounders that are shared between siblings, including factors related to upbringing and parent characteristics (Wooldridge, 2008). A downside of FFE models is that they can only consider families with at least two non-coresident children, excluding 14.2 percent of the sample. They also preclude the inclusion of parent-level determinants, which can be of substantive interest. Because the results from the regular and the FFE models were substantively similar, I will mostly refer to the regular models in the discussion of the findings. The results of the FFE models are presented in Appendix Table 15.

To check the robustness of the findings, I replicated the abovementioned analyses with ordered logit models using the original ordinal scale of the dependent variables. Because results were relatively similar (see Appendix Table 16 for the ordered logit results), I decided to present the more easily interpretable continuous contact scale. I also conducted separate models for sons and daughters as well as for rural and urban parents, and included additional control variables: child income, parental education and presence of grandchildren. Finally, by including children living in the parental household as daily contacts, I checked whether selection into co-residence affected my results. The results (available upon request) did not give reason to modify the conclusions presented in this paper.

RESULTS

Contact patterns

In order to compare contact frequency in China to what has been observed in other countries, I calculated the percentage of children that had at least weekly face-to-face contact to parents, adding coresident children to the weekly contact category. The findings indicate that 56% of Chinese children saw their parent(s) at least weekly. This is similar to what has been observed in the US (55%) and Japan (56%), but lower than Italy (86%) (calculations by author based on the ISSP data (2003)). CHARLS data also suggest that in 2.7% of all child-parent dyads there was (almost) no face-to-face contact, and in 1.1% there was (almost) no contact of any kind, which relatively low from an international perspective.

Table 13**:** *Frequency of contact between parents and their non-coresident adult children, by location of child*

	Same community	Same region	Same province	Different province	Abroad
Visits:					
(Almost) never	2.1	2.0	4.6	11.2	30.8
Once a year	8.6	9.6	28.2	62.4	64.6
Several times a	10.4	25.7	43.6	21.6	1.3
(At least) monthly	12.9	31.8	18.0	3.1	3.3
(At least) weekly	19.4	22.9	3.9	0.5	0.0
Daily	46.6	8.1	1.8	1.2	0.0
Phone contacts:					
(Almost) never	43.7	20.1	11.7	7.7	15.9
Once a year	1.1	0.8	1.1	1.8	0.0
Several times a	3.9	6.8	9.4	10.9	6.7
(At least) monthly	14.4	26.8	31.2	38.4	31.6
(At least) weekly	21.0	35.2	36.8	36.5	29.8
Daily	15.9	10.3	9.7	4.8	16.0

Note: Weighted percentages reflecting the highest applicable category

Descriptive analysis by geographic distance (presented in

Table 13) shows that most children with infrequent contact lived far away from their parents. Children who lived in a different province typically visited once a year at most (74%). In contrast, about half of the children who lived in the same community saw their parent(s) every day. Most migrant children contacted their parents regularly by other means, however: 75% did so at least on a monthly basis, and 41% at least weekly.

Determinants of contact

Table 14 presents the results from the Poisson models for visits (Model 1) and other contacts (Model 2). The coefficients have been exponentiated so that they can be interpreted as incidence rate ratios (irr): the rate of change in contact resulting from a

unit change in the respective predictor. Models 1A and 2A show the main effect of each variable. Models 1B and 2B add interactions between child gender and marital status, education level and urban origin. These interaction effects show to what extent the effect of marriage, education and urban origin differed between daughters and sons.

As expected, geographic proximity was a strong predictor of the number of visits (Hypotheses 1a). For example, children living in a different community in the same region saw their parents much less often than children that lived in the same community as their parents (*irr* = 0.31, $p<0.001$), and visits declined ever further when children lived in a different region or province. Hypothesis 1b suggested that distant children would compensate for a lack of visits by increasing other types of contact. Table 14 shows that this was not the case: other contacts also declined somewhat with distance, possibly as a result of higher charges for domestic long-distance calls.

Given the cultural preference for sons in China, I had expected sons to have more contact with parents than daughters (Hypothesis 2a). The models without interaction terms show that, controlling for distance and other covariates, daughters visited parents less frequently (*irr* = 0.76, $p<0.001$), but were slightly more likely to contact their parents by other means (*irr* = 1.12, $p<0.001$). These models also show that marriage had an overall positive effect on both types of contact. Hypothesis 2b suggested that marriage would decrease parental contact for daughters, because they divert their time and attention to their family-in-law. Model 1B shows that this was not the case for visits: the positive impact of marriage is roughly the same for daughters and sons. It does appear, however, that marriage increases other types of contact in parent-son dyads more than in parent-daughter dyads (Model 2B).

Table 14**:** *Results from Poisson models for visits and other contact (irr)*

	Model 1: Visits		Model 2: Other contact	
	A	B	A	B
Child characteristics:				
Daughter	0.76***	0.62***	1.13***	1.20*
Married	1.17**	1.18**	1.16***	1.24***
Daughter * Married		0.98		0.87*
Education (ref: Up to primary)				
Middle school or higher	1.04	0.97	1.39***	1.34***
College or higher	1.07	0.86*	1.69***c	1.46***
Daughter * Middle school		1.17***		1.05
Daughter * College		1.57***c		1.28***c
Distance (ref: Same community)				
Same region	0.31***	0.32***	0.89***	0.90**
Same province	0.08***c	0.08***c	0.71***c	0.72***c
Different province	0.03***c	0.03***c	0.63***c	0.63***c
Abroad	0.01***c	0.01***c	0.49**	0.48**
Sibsize (ref: no siblings)				
One sibling	0.90*	0.90	0.88**	0.88**
Two siblings	0.73***c	0.74***c	0.71***c	0.71***c
Three or more siblings	0.71***	0.72***	0.59***c	0.59***c
Parent characteristics:				
Coreside with sibling	0.98	0.98	0.99	1.00
Marital status (ref: couple)				
Single father	0.82***	0.82***	0.58***	0.58***
Single mother	0.98c	0.98c	0.79***c	0.79***c
Age bracket (ref: 45-59)				
60-69	1.04	1.04	0.92*c	0.92*
70-79	1.02	1.02	0.76***c	0.76***c
80 and above	1.06	1.05	0.73***	0.73***
Any parent has care need	1.02	1.02	0.93	0.93
Living standard (ref: (rel.) high)				
Average	0.93	0.93	0.72***	0.72***
(Relatively) poor	0.87*c	0.86*c	0.58***c	0.58***c
Urban	1.41***	1.28***	1.48***	1.49***
Daughter * Urban		1.26***		0.98
Observations	16715	16715	16715	16715

Note: Robust standard errors not shown. Other contact includes phone, text message, mail and email. Irr: Incidence Rate Ratio Ref.: Reference category. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. c Statistically different from preceding category at the .05 level (for factor variables with more than two levels).

A particularly striking result is the interaction between education level and gender for both types of contact. To facilitate their interpretation, these interactions have been plotted in Figure 8 (visits) and Figure 9 (other contact). Figure 8 indicates that gender differences in visiting were strongly dependent on education level. Among children with little formal education, sons paid more visits to parents than daughters. This gender gap is reduced for children that completed middle school and eliminated among college-educated children. Model 2A shows that education had an overall positive effect on other contact, which is probably due to the positive relation between education and the use of electronic devices. The significant interaction term in Model 2B indicates, however, that the effect of college education was stronger for daughters than for sons. Overall, the findings show that gender differences in intergenerational contact were moderated by education level. The results therefore support Hypothesis 2c.

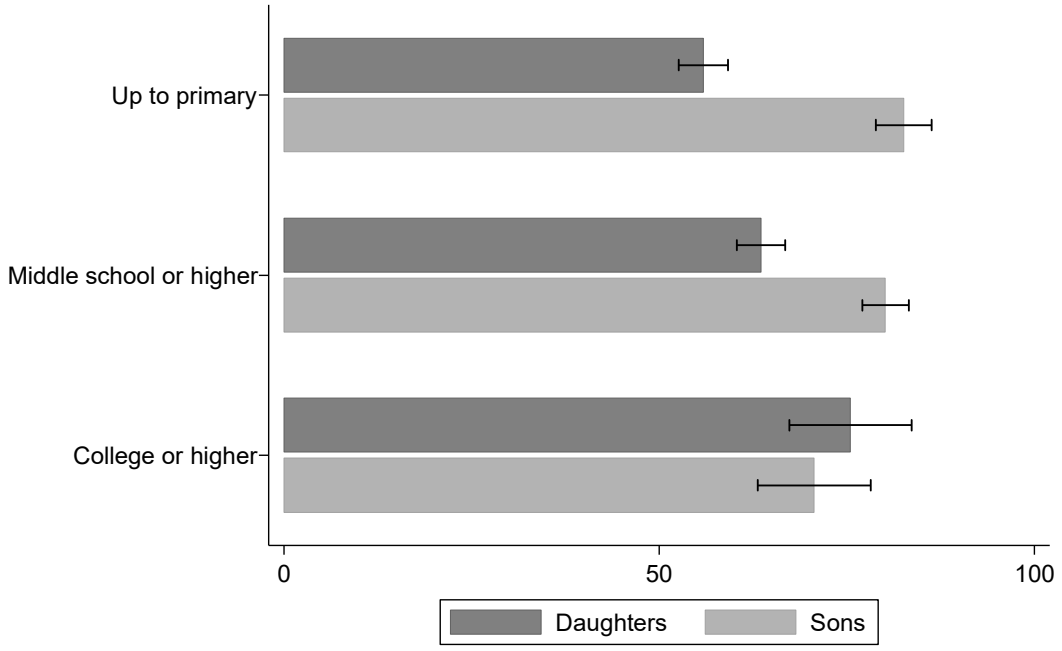

Figure 8. Interaction effect between child gender and education level in Model 1B (visits)

Predicted mean contact frequency in the Poisson Model 1B (see Table 14). Spiked lines represent 95% confidence intervals.

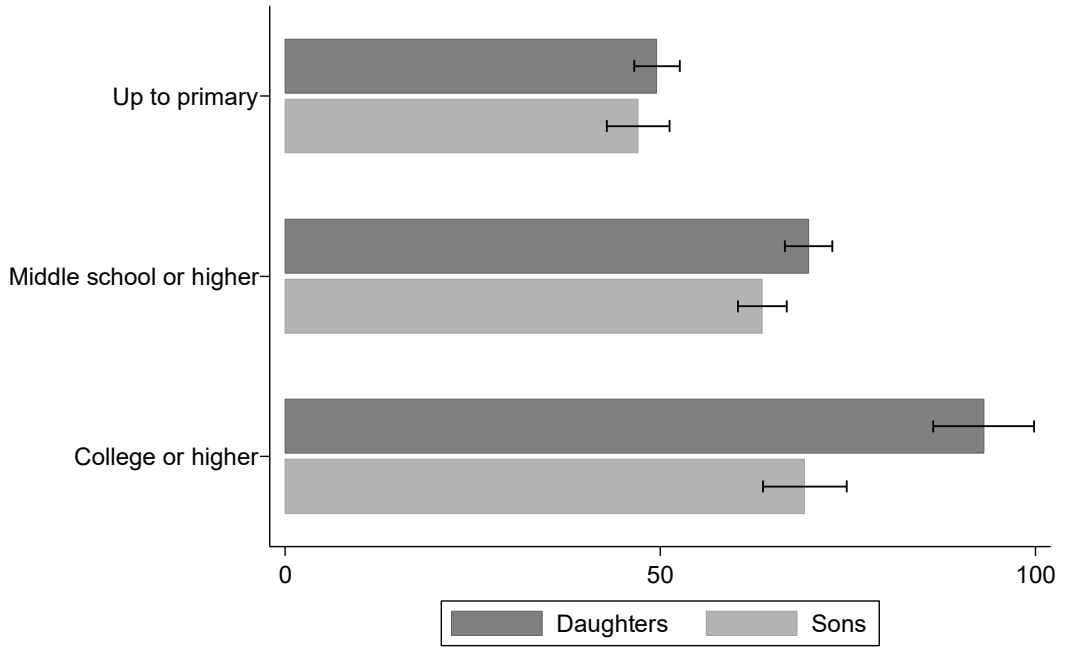

Figure 9. Interaction effect between child gender and education level in Model 2B (other contact)

Predicted mean contact frequency in the Poisson Model 2B (see Table 14). Spiked lines represent 95% confidence intervals. Other contact includes phone, text message, mail and email.

Furthermore, Table 14 shows that the number of other contacts was highest for middle-aged parents (aged 45-59), while visits remained relatively constant across parent age cohorts. It is also evident that children with few or no siblings maintained more frequent contact with their parents (or, conversely, received more attention from parents).

The parent-level covariates suggest that coresidence with a sibling had no or very little impact on contact. They also show that single fathers received less visits than couples or single mothers. Couples also had higher levels of other contact with their non-coresident children than single parents. This is somewhat surprising, as I had expected that children would compensate for the absence of a spouse. For widowed fathers, the findings might be explained by the absence of mothers' kin-keeping activities. I also found that rural parents and comparatively poor parents had significantly less contact with children, both in person and by other means. Finally, the significant interaction

term in Model 1B shows that the gender gap in visits was somewhat smaller in urban areas.

Finally, Appendix Table 15 presents the results of the family fixed effect models, which contain the same child-level variables and interactions as the regular Poisson models. The results largely confirm the findings described above. In particular, they show that both visits and other types of contact were negatively related to distance and that gender differences were moderated by education level. This demonstrates that the presented results were not affected by unobserved family-level confounders.

DISCUSSION

Merely a few decades ago, most Chinese families would be well characterized by the classic extended family model: collectivist, living in close proximity and bound together by strongly familialistic and patriarchal norms. Although elements of this traditional family model remain, it has been profoundly challenged by the socio-cultural and demographic changes that took place in post-reform China, notably a shifting intergenerational and intra-marital power balance and the large-scale outmigration of younger age cohorts. Against this backdrop, I analyzed contemporary patterns of social contact between Chinese parents and their adult children, using a recent, nationally representative dataset. Social contact has remained virtually unstudied in the Chinese context, even though its importance, both intrinsically and as an enabling factor for family support, is well known.

The findings show that visits rapidly decreased when children did not live in the same community or region as their parents. Whereas most children who lived in the same village or neighborhood saw their parents every day, those who lived in a different province normally visited their parents only once a year. A similar contact pattern has been observed for migrant children in Thailand (Knodel, Kespichayawattana, Saengtienchai, & Wiwatwanich, 2010) and likely reflects the costs of travelling as well as the scarcity of holidays for most Chinese workers. Most migrant children regularly stayed in touch with their parents by phone or other electronic means, however,

reflecting the importance of the *mobile revolution* in expanding the opportunity structure for intergenerational solidarity.

I also analyzed the cultural determinants of contact, focusing in particular on differences between daughters and sons. Because of the persistent impact of filial piety as well as higher parental investment in sons, I expected sons to have more interaction with parents than daughters. Son-parent dyads indeed displayed higher levels of face-to-face contact, which is a unique feature of Confucian societies. Daughters, however, were more likely to contact their parents by phone and other electronic means, which is in line with what has been observed in the West (Hank, 2007). One could speculate that this difference in the means of contact reflects the gendered nature of intergenerational support in China: while sons provide more practical types of support requiring physical contact, daughters are seen as providers of emotional care, which can be delivered remotely (Shi, 2009).

In line with the traditional Chinese family model, I had expected marriage to reduce contact between daughters and their natal parents. Instead, I observed that marriage increased contact for daughters as well as sons. These findings are consistent with a number of ethnographic studies that have reported a strengthening of the bond between married daughters and their natal parents in post-reform China (Miller, 2004; Shi, 2009; Yan, 2003; W. Zhang, 2009). The observation that most married women maintained frequent contact with their natal parents reflects the loosening of patriarchal norms and women's increased autonomy vis-à-vis their husbands and parents-in-law: "[in the traditional situation] a married woman transferred her loyalty from her natal family to her husband's family only because she was pressured by the institutional arrangements of Chinese kinship, by the cultural constraints of traditional ethics, and by her husband" (Yan, 2003, p. 181).

The substantial impact of daughters' education on parental contact suggests that this autonomy is closely linked to women's social status and income-earning opportunities. The findings thus support Shi's assertion that "women's emerging filial practice with their natal parents (…) is derived from women's recently obtained decision-making power in marriage and greater economic leverage" (2009, p. 359). From the parents' perspective, the reduction in family sizes has increased the need to rely on daughters

as well as sons for support. Finally, the anthropologist Yunxiang Yan suggests that the strengthening of parent-daughter ties also reflects a shift towards 'intergenerational intimacy': a more egalitarian parent-child relationship that emphasizes emotional bonds rather than filial obligations (2016).

Although the focus of this study was on child-level variation, it can also serve to identify groups of parents with comparatively weaker ties to children. These include widowed parents (fathers in particular), relatively poorer parents and parents living in rural areas. Perhaps unsurprisingly, these groups broadly coincide with the main risk factors for loneliness and depression (Silverstein et al., 2006; K. Yang & Victor, 2008). These findings are particularly worrisome because they highlight the multifaceted nature of inequality and disadvantage in contemporary China, which is not only expressed in the economic domain but also in the inability to maintain supportive family networks. The finding that urban parents and wealthier parents have more contact with children (controlling for distance) is consistent with what has been observed in Western countries (Lye, 1996).

The size and representativeness of the CHARLS sample ensures that findings can be generalized to Chinese parents aged 45 and above and their adult children. Nevertheless, a number of limitations should be taken into account when interpreting the results. Firstly, it has been observed that distance is not completely exogenous to contact (Hank, 2007). For example, the fact that sons lived closer to parents may reflect their cultural preference for frequent contact. By controlling for distance, I may thus underestimate the role of cultural factors. Secondly, confirmation and recollection bias may have affected parents' reports on the frequency of interaction with their children. It has been shown, however, that bias in contact estimates is generally low compared to other indicators of intergenerational solidarity (Steinbach, 2013). Finally, it could be argued that a high level of interaction does not necessarily guarantee a satisfying relationship. For example, it has been observed that some Chinese parents derived more emotional value from interaction with daughters, even though they saw them less often than sons (Shi, 2009). Due to data limitations I could not relate contact frequency to the perceived strength of emotional bonds. The

interaction between these dimensions constitutes an important area for future research in the Chinese context.

These limitations notwithstanding, this study contributes to our understanding of contemporary Chinese families in a number of ways. First, the findings suggest that concerns about the decline of intergenerational solidarity in a context of mass internal migration may be overstated. The widespread availability of (mobile) phone connections, even in the most remote rural areas, allows parents and their migrant children a degree of connectivity that would have been unimaginable merely one or two decades ago. Second, the classic description of Chinese daughters as temporary members of their natal families (Greenhalgh, 1985) appears outdated. Instead, the findings show that daughters generally maintain intensive social relations with their natal parents, although notable gender differences persist amongst the least educated. Those remaining differences are likely to be reversed as the Chinese population becomes more educated and affluent, with important implications for son preference and old age security. In Taiwan, which has a comparable Confucian legacy but higher education levels, son preference has virtually disappeared already (T. C. Lin, 2009).

APPENDIX CHAPTER 4

Table 15: *Results from family fixed effect (FFE) Poisson models for visits and other contact (incidence rate ratios)*

	Model 1: Visits		Model 2: Other	
	A	B	A	B
Child characteristics:				
Daughter	0.75***	0.73*	1.05	1.12
Married	1.02	1.06	1.09	1.15*
Daughter * Married		0.90		0.90
Education (ref: up to primary)				
Middle school or higher	0.92*	0.85***	1.13***	1.12*
College or higher	0.85*	0.70***	1.24***c	1.11
Daughter * Middle school		1.21**		1.01
Daughter * College		1.57***c		1.22**c
Distance (ref: Same community)				
Same region	0.28***	0.29***	0.89***	0.90**
Same province	0.08***c	0.08***c	0.70***c	0.70***c
Different province	0.03***c	0.03***c	0.66***	0.66***
Abroad	0.01***c	0.01***c	0.52	0.51
Observations	14244	14244	12256	12256

Note: Robust standard errors not shown. Other contact includes phone, text message, mail and email. Ref.: Reference category. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. c Statistically different from preceding category at the .05 level (for factor variables with more than two levels)

Table 16: *Results from ordered logit models for visits and other contact (Odds Ratios)*

	Model 1: Visits		Model 2: Other	
	A	B	A	B
Child characteristics:				
Daughter	0.83***	0.83	1.40***	1.59***
Married	1.30***	1.44***	1.23***	1.31***
Daughter * Married		0.80*		0.88
Education (ref: Up to primary)				
Middle school or higher	1.28***	1.06	1.64***	1.66***
College or higher	1.40***	1.07	2.49***c	2.30***c
Daughter * Middle school		1.35***		0.98
Daughter * College		1.61***c		1.18 c
Distance (ref: Same community)				
Same region	0.24***	0.24***	1.59***	1.60***
Same province	0.05***c	0.05***c	1.40***c	1.41***c
Different province	0.01***c	0.01***c	1.38***	1.38***
Abroad	0.00***c	0.00***c	0.71c	0.70c
Sibsize (ref: no siblings)				
One sibling	0.86	0.85	0.78**	0.79**
Two siblings	0.64***c	0.63***c	0.59***c	0.59***c
Three or more siblings	0.59***	0.59***	0.47***c	0.48***c
Parent characteristics:				
Coreside with sibling	0.98	0.98	1.04	1.04
Marital status (ref: couple)				
Single father	0.64***	0.64***	0.49***	0.49***
Single mother	0.95c	0.95c	0.57***c	0.57***c
Parent(s) age bracket (ref: 45-59)				
60-69	1.02	1.03	0.86***	0.86***
70-79	0.96	0.96	0.56***c	0.56***c
80 and above	1.02	1.02	0.42***c	0.42***c
Any parent has care need	1.01	1.01	0.84***	0.84***
Living standard (ref: (rel.) high)				
Average	0.79*	0.78*	0.56***	0.56***
(Relatively) poor	0.64***c	0.64***c	0.41***c	0.41***c
Urban	1.75***	1.75***	1.48***	1.54***

Daughter * Urban		0.98		0.94
Cut 1	-6.14***	-6.18***	-1.93***	-1.87***
Cut 2	-3.54***	-3.58***	-1.86***	-1.80***
Cut 3	-2.75***	-2.79***	-1.73***	-1.67***
Cut 4	-2.09***	-2.13***	-1.43***	-1.37***
Cut 5	-1.40***	-1.44***	-0.73***	-0.67***
Cut 6	-0.94***	-0.98***	-0.13	-0.07
Cut 7	-0.38**	-0.41**	0.77***	0.83***
Cut 8	0.13	0.10	1.86***	1.93***
Observations	16715	16715	16715	16715

Note: Robust standard errors not shown. Other contact includes phone, text message, mail and email. Ref.: Reference category. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. [c] Statistically different from preceding category at the .05 level (for factor variables with more than two levels).

CHAPTER 5

The Effect of Education on Spatial Proximity and Contact with Parents in China: A Within-Family Analysis

SUMMARY

This study looks at the impact of children's education level on spatial proximity and social contact with parents in China. China has seen an unprecedented expansion of education in recent decades, resulting in large education gaps between children and their parents. Previous research suggests that this may lead to increased distance and reduced contact between generations, with potentially negative impacts on older parents' well-being. I use, the China Health and Retirement Longitudinal Study, a recent nationally representative dataset that contains extensive information on Chinese parents aged 45 and above and each of their adult children. In order to control for possible confounders on the family- and environmental level, I employ a family-fixed effects approach that exploits differences in education between adult siblings. The findings show that education increases geographic distance from the parental home, which in turn reduces face-to-face contacts with parents. Surprisingly, education has no impact on face-to-face contact and a positive impact on phone contact after controlling for proximity and income. These findings are in line with the modified extended family model, in which parents and children maintain strong ties in spite of increasing geographic distance. I conclude that the rapid expansion of communication technology has enabled upwardly mobile children to seek better opportunities elsewhere without abandoning the traditional demands of filial piety.

"While his parents are living, a son must not go abroad to a distance"

(Confucius, Analects, Book 4-19; translated by Dawson, 2002)

INTRODUCTION

In recent decades, China has seen a rapid decline in coresidence rates and a surge in internal migration: the total number of migrants was recently estimated at 236 million (National Bureau of Statistics of China, 2013). Because most migrants belong to younger age cohorts, older parents increasingly find themselves geographically separated from their adult offspring. This separation is often seen as a problem for Chinese elders, many of whom rely on their children as the main source of social support and care. These concerns have resulted in a substantial body of literature on the 'migration-left behind nexus' in China as well as other Asian countries (Toyota et al., 2007). Most of this literature, however, is characterized by a focus on the parent rather the (migrant) child and on economic rather than social relations with children (e.g. Guo et al., 2012; S. Li et al., 2004; Silverstein et al., 2006; Xie & Zhu, 2009).

The present study provides a different angle to this discussion by looking at how children's characteristics, especially education level, structure their relationships with older parents. The large-scale expansion of access to education is an important element of China's socio-economic modernisation process, and is likely to have important implications for parent-child relations or *intergenerational solidarity* (Bengtson & Roberts, 1991). I am particularly interested in the effect of education on proximity (or structural solidarity) and social contact (or associative solidarity), as well as the relations between the two (Bengtson & Roberts, 1991). In combination, they provide a strong indication about the nature and strength of extended family ties.

Education is often seen as a driver of individualism and nuclear family orientation. In Western countries, it has been shown to increase distance and reduce social contact between generations, although the latter may be largely due to the former (Hank, 2007; Kalmijn, 2006; G. Lin & Rogerson, 1995). The impact of education on proximity and contact may be confounded, however, by unobserved family- or environmental factors, such as the availability of schools and skilled jobs in the region of origin. I

therefore used a family fixed-effects model that exploits differences in education between adult siblings. Theoretically, this within-family approach is well-suited to an understanding of the family as a corporate group, in which siblings coordinate their behaviour in order to optimize joint family outcomes (Henretta, Hill, Li, Soldo, & Wolf, 1997; Lee et al., 1994). Moreover, I distinguish between face-to-face and phone contact and between direct and indirect effects of education, as recommended by Kalmijn (2006). Analyses were based on the nationally representative 2011 China Health and Retirement Longitudinal Study (CHARLS).

BACKGROUND

Education is widely recognized as a key determinant of individual behaviour and attitudes, ranging from marriage and cohabitation (Thornton, Axinn, & Teachman, 1995) to fertility decisions (Axinn & Barber, 2001) and family values (Abramson & Inglehart, 1995; Treas, 2002). In family sociology, the impact of education (or social class) on extended family relations is a classic topic. Most older studies follow the modernisation paradigm, in which education functions as a catalyst of individualism, increasing the physical and emotional distance between generations (Cowgill, 1974; Goode, 1963; Parsons, 1943). More recent studies have taken a more nuanced perspective, however, observing that most middle class families manage to maintain close family ties even if they do not live in close proximity, e.g. by making frequent phone calls (Greenwell & Bengtson, 1997; Kalmijn, 2006; Kulis, 1987; Litwak & Kulis, 1987).

There are several reasons to revisit this subject in the case of China, which has experienced massive socio-economic changes in recent decades. First, the effects of education on family relations have mainly been studied in Europe and the United States thus far, and thus the observed relationships may be specific to the Western context. Chinese family traditions, cultural norms and socio-economic conditions diverge widely from those in the West. Chinese families have often been described as corporate groups, which collectively seek to maximize resources and then distribute them in a way that maximizes each members' well-being (Cong & Silverstein, 2010; Lee

et al., 1994; Sun, 2002). It could be that China's highly familialistic family culture neutralizes the individualizing forces of educational attainment. Second, China's educational expansion has taken place in a relatively short period of time, creating particularly large gaps in education between parents and their children[15] (Treiman, 2013). Finally, even though the modernisation perspective has been largely discredited in the Western literature, its core arguments have resurfaced in the discussion about the impact of economic development on intergenerational solidarity in non-Western societies (Aboderin, 2004). Chinese elders in particular are often assumed to be literally and figuratively 'left behind' by their geographically and socially mobile children. The perceived deleterious effect of economic modernisation on intergenerational family ties is also a prominent feature in the Chinese and international public discourse, as evidenced by headlines such as "China's transformation frays traditional family ties, hurting many seniors" [The Washington Post, 13.09.2013] and "Migration adds to elderly-care woes" [The China Daily, 22.19.2015].

Bengtson & Roberts (1991) suggest that the strength of intergenerational solidarity depends six interrelated elements of parent-child interaction: affection, social contact, consensus, functional exchange, the strength of filial norms and opportunity structure (which includes geographic proximity). Existing studies on intergenerational relations in China have generally focussed on coresidence (e.g. Cong & Silverstein, 2008; Korinek et al., 2011) as well as financial transfers and other types of functional support (e.g. Cai et al., 2006; Cong & Silverstein, 2011; Lee et al., 1994). The absence of either is often taken to imply a weakening of family relations, with potentially negative consequences for parents' well-being. This view, however, may no longer be accurate in China's contemporary socio-economic environment. For example, a number of qualitative studies have observed that "the aged do not necessarily prefer or benefit from co-residence with their children" (Miller, 2007, p. 32). Both generations' preferences for privacy and independence as well as frequent interaction may be better served by

[15] Of the children included in this study, 54.5% had completed a higher level of education than their father/mother (whichever was highest), 32.9 % the same and 12.6% a lower level (author's calculations).

living in close proximity rather than in the same household (Croll, 2006; Thøgersen & Anru, 2008). Similarly, not all Chinese parents are dependent on financial transfers from children, and many are net contributors to their offspring (Xie & Zhu, 2009). As an increasing number of parents live in independent households and have adequate incomes, frequent visits or phone calls have replaced gifts of money as the preferred way of expressing filial piety (Shi, 2009).

Following this line of argumentation, the dependent variables in this study are geographic proximity (including coresidence) and social contact. Proximity and contact to children are of great intrinsic importance to parents, and they are also an important precondition for the provision of intensive physical care and instrumental support (Litwak & Kulis, 1987). Moreover, both are likely to be affected by education level, for reasons I will explain in the following sections.

THEORETICAL FRAMEWORK

Effects of education on coresidence and spatial proximity

Geographic proximity is a precondition for the exchange of various forms of time-intensive support between generations, and has therefore been studied quite intensively (see e.g. Blaauboer, Mulder, & Zorlu, 2011; Chan & Ermisch, 2015a; Compton & Pollak, 2015; Hank, 2007; Rogerson, Weng, & Lin, 1993). Thus far, however, there has been no comprehensive study of its determinants in the Chinese context.

I follow Silverstein (1995) and Compton & Pollak (2015), who convincingly argue that coresidence should be treated as a qualitatively distinct family arrangement, rather than as the highest level of proximity. Sharing a household with parents has implications for costs and privacy that are likely to have their own specific determinants. In China, coresidence with adult children (in most cases a son) is an ancient tradition that used to be practiced almost universally, but it has declined dramatically in recent decades, and a substantial number of older adults now live alone or with a spouse only (Cai et al., 2012). The decline of the multigenerational

household is often perceived as a threat to older parents' well-being, and its determinants and consequences have been the subject of much scholarly debate. Although most of this debate focuses on parent-level determinants, it is also relevant to know which children end up living with parents. Because parents generally live with one married child only, selection into coresidence can be thought of as a bargaining process between (male) siblings (Cong & Silverstein, 2010; Lee et al., 1994). A number of studies have found other studies observed that high-status sons preferred to provide financial support in lieu of sharing a household with parents, thereby maintaining their privacy and independence (Lee et al., 1994; Xie & Zhu, 2009; Q. F. Zhang, 2004). According to Xie & Zhu "rich sons may be able to buy their way out of this obligation [coresidence] by providing cash, whereas poor sons provide this kind of support to parents and also save money by living together" (2009, p. 183). Although these studies did not explicitly look at the role of education, I expect educated children to have both higher incomes and stronger preferences for independence (Abramson & Inglehart, 1995):

> *Hypothesis 1:* Educated children are less likely to coreside with parents because of their higher incomes [wealth effect] and preferences for independence [normative effect].

Education not only affects coresidence decisions, but also the proximity of non-coresident children. For example, obtaining (advanced) education may require a move away from the parental home, particularly for rural children. Education also provides access to skilled jobs that are typically concentrated in specific (urban) areas (Chan & Ermisch, 2015a; Compton & Pollak, 2015; Kalmijn, 2006). Less educated children on the other hand tend to have working-class jobs that are more readily available in the location or origin. Due to their lower incomes, they may also be more reliant on parents to provide various services, such as child care (Smith, 1998). If similar factors play a role in China, we would expect a positive association between education and spatial distance to the parental home. The literature on internal migration in China suggests that migration is often a family strategy to increase and diversify (extended) family income, in line with corporate group model (Fan & Wang, 2002). Because the returns to migration increase with education, this perspective suggests that educated

children are more likely to become migrants. Moreover, analyses of migration flows show that skilled migrants (defined as those with a tertiary degree) tend to move over longer distances than less-skilled migrants, as they are more able to navigate unfamiliar environments and participate in a geographically wider labour market (Y. Liu & Shen, 2016). All returns to migration increase with education of the above points to the following hypothesis:

Hypothesis 2: Children with more education live further away from the parental home.

Effects of education on intergenerational contact

If education increases the geographic distance between generations, as the previous section argues, does it thereby weaken parent-child relationships? The modernisation perspective suggests that it does, because spatial separation reduces opportunities for close contact and mutual support, and thereby "fosters the social and intellectual separation of the generations" (Cowgill, 1974, p. 13). An alternative perspective is provided by Litwak (1960), who observed that socially mobile children generally maintain strong family ties in spite of increased geographic distance. Communication technology plays an important role in this, because it makes parent-child contact less dependent on physical proximity (Litwak & Kulis, 1987). Education thus promotes a shift from 'classic' extended families (characterized by close geographic proximity and frequent face-to-face contact) to 'modified' extended families (with greater distance but frequent phone contact). Recent studies have generally found support for this proposition (Greenwell & Bengtson, 1997; Hank, 2007; Kalmijn, 2006; Treas & Gubernskaya, 2012). For example, Kalmijn (2006) observed that although highly educated Dutch children had fewer face-to-face contacts with their parents, this was largely due to the fact that they lived farther away from them. Moreover, they compensated their lack of in-person contact by calling more frequently.

Although the aforementioned studies are based on data from Western countries, Knodel & Saengtienchai (2007) and Zimmer et al. (2008) suggested that the modified extended family concept may also be applicable to Asian families, many of which have moved from multi-generational to nuclear living arrangements in recent decades.

Looking at rural-to-urban migrants in Thailand and Cambodia, they observed that most migrant children maintained close and supportive relations with their parents. Technological advances, particularly the widespread use of mobile phones, enabled this model of 'intimacy at a distance'. Gruijters (n.d.) observed a similar pattern in China.

The literature thus suggests that in evaluating the effects of education on intergenerational contact we should distinguish between a) face-to-face and phone contact and b) direct and indirect effects of education. Kalmijn (2006) defines the direct effect of education as the impact of education on family values and resulting preferences for contact, while the indirect effect operates via distance. Following the modified extended family perspective, the hypotheses for the *indirect* effects of education are:

> *Hypothesis 2a:* Educated children live further away from their parents, which reduces opportunities for face-to-face contact [indirect effect via distance].
>
> *Hypothesis 2b:* Educated children seek to compensate for their lack of personal interaction by increasing phone contact [indirect effect via distance].

The direct effect of education on intergenerational contact is less clear. Although the Cowgill's hypothesis of declining extended family ties has been largely disproven (Bengtson, 2001), there is a clear educational gradient in the strength of traditional norms, including norms related to family obligations (Abramson & Inglehart, 1995; Thornton & Young-DeMarco, 2001). If contact with parents is mainly driven by children's sense of obligation, education may lead to weaker family ties even after controlling for proximity (Kalmijn, 2006). Moreover, if the (lack of) educational attainment by children creates a substantial educational disparity between generations, this may weaken family relations because "the upwardly mobile may avoid associations with their humbler origins, and the downwardly mobile may be shunned by their embarrassed or disappointed kin" (Kulis, 1987, p. 422). This may be particularly applicable to China, where education gaps between generations are often large. The resulting divergence in interests and lifestyles may reduce preferences for contact:

Hypothesis 3a: Education has a negative direct effect on face-to-face and phone contact [value change effect].

On the other hand, it has been shown that education is positively related to filial attitudes in China (Zhan, 2004), possibly because of normative socialization in the Chinese school system (Cheung & Kwan, 2009). Moreover, the reciprocity perspective suggests that children whose parents invested more in their education may 'reward' them with frequent calls and visits (Lee et al., 1994; Leopold & Raab, 2013). Financing children's (higher) education often requires major sacrifices from parents, which in turn instils a sense of gratitude and indebtedness in children:

Hypothesis 3b: Education has a positive direct effect on face-to-face and phone contact [reciprocity effect].

METHODS

Data and sample

The data used for this study are derived from the first wave of the China Health and Retirement Longitudinal Study (CHARLS), which was conducted in 2011-2012. CHARLS is part of a (largely) harmonized family of surveys modelled on the American Health and Retirement (HRS) survey. This set of surveys also includes, amongst others, the Survey of Health, Ageing, and Retirement in Europe (SHARE) and the Japanese Study on Aging and Retirement (JSTAR). CHARLS used a multi-stage sampling design that covered 28 out of China's 30 provinces. It sampled individuals aged 45 or above and their spouses, who were interviewed separately. Data were collected using computer-assisted face-to-face interviews, with extensive quality checks and follow-ups. The overall response rate was 80.51 percent (Zhao, Strauss, et al., 2013).

In this study I used the child-level dataset, which provides detailed information on each of the respondent's children, including their location and contact frequency. This information was provided by the 'family respondent', who could either be an interviewee or another knowledgeable household member. Children aged 22 and above were included in the analytical sample, because most Chinese have completed

their education by this age. The total sample consisted of 24,318 adult children, who were linked to 9,280 parental households (the survey respondents). On average, each surveyed household thus contributed 2.6 children to the sample. Contact with coresident children (N=6,533) was not measured in CHARLS, presumably because they see their parents on a daily basis. The analyses for proximity and contact are thus based on the non-coresident sample (N=18,297).

Both face-face contact (4.8 percent) and phone contact (7.5 percent) contained a number of missing values, mostly because their contact frequency was indicated as 'other' and could thus not be established. These cases were not used in the analyses, as recommended by von Hippel (2007). For cases that contained missing or unknown values on covariates I applied single imputation based on observables. Child income had the highest degree of missingness (18.8 percent), followed by age (3.7 percent) and education level (1.0 percent).

Table 17**:** *Descriptive statistics of the analytical sample (weighted)*

	Coresident %	Non-cores. %	All %	Within[1] %
Location				
Same household	100.0	0.0	28.1	62.2
Adjacent building	0.0	5.5	4.0	41.7
Same community	0.0	28.5	20.5	50.6
Same region / city	0.0	37.5	27.0	52.6
Same province	0.0	12.8	9.2	49.3
Different province	0.0	15.3	11.0	54.8
Abroad	0.0	0.4	0.3	46.4
Face-to-face contact (1-9 scale)	-	5.1 (mean)	-	1.7 (S.D.)
Phone contact (1-9 scale)	-	5.2 (mean)	-	1.3 (S.D.)
Education				
Less than primary	8.6	17.9	15.3	54.5
Primary school	17.1	23.4	21.6	55.8
Junior high school	35.0	32.4	33.2	63.5
Senior high school	20.1	15.4	16.7	58.2
College or higher	19.1	11.0	13.3	67
Gender				
Daughter	26.1	55.2	47.0	61.7
Son	73.9	44.8	53.0	66.5
Marital status				
Not married	40.2	9.5	18.2	62
Married	59.8	90.5	81.8	89
Presence of grandchildren				
No grandchild <16	53.2	45.4	47.6	68.9
At least one grandchild <16	46.8	54.6	52.4	73
Age (years, mean)	38.1	29.5	35.7	3.9 (S.D.)
Income level				
Very low	40.2	24.6	29.0	65.4
Low	28.0	32.2	31.0	59.8
Medium	25.2	32.2	30.3	61
High	6.6	11.0	9.8	53.8
Observations (unweighted)	6,609	18,221	24,830	24,830

[1] This column refers to the within-family percentage (for categorical variables) or standard deviation (for interval variables). The within percentage can be interpreted as the average percentage of children from a given family that belong to the category, given that at least one child in the family belongs to the category.

Measures

The measures used in this study are summarized in table 17. The first dependent variable, *coresidence*, indicates whether the child shared a household with parent(s) at the time of the survey. Table 17 shows that this was the case for 28.1 % of all sampled children. I then look at spatial proximity to parents, limiting the sample to non-coresident children. Proximity is defined by the location of the child's household relative to that of the parents: next door (1), the same community / neighbourhood (2), in the same region / city (3), a different region in the same province (4), a different province (5) or abroad (6). 'Region' here refers to prefectures, relatively large sub-provincial units that often contain several million inhabitants. 'Same region / city' is the most common location, following by 'same community / neighbourhood'. Is less common for children to live next door to their parent (also referred to as quasi-coresidence) (Chen, 2005). Contact frequency, is divided into *face-to-face contact* and *phone contact* (including letters and electronic messages), both of were measured using a nine-point scale ranging from 'almost never' to 'every day'. In all likelihood phone contact consisted mainly of communication by mobile phone, the use of which is now ubiquitous in China[16]. For modelling purposes, both spatial proximity and contact are treated as quasi-continuous variables.

The child's highest attained level of education was the main variable of interest in this study. *Child education* consisted of five levels: (1) less than primary school, (2) primary school, (3) junior high school, (4) senior high school and (5) college or higher. I controlled for a number of additional variables that can differ between siblings, notably income level, age, marital status and parenthood. *Income level* is a measure of the combined income of the child and his or her spouse. It is divided into four

[16] CHARLS data suggest that over 90 percent of Chinese adults aged 45 and above by had either a mobile phone or a landline connection at home (calculation by author). Connection rates amongst younger generations are likely to be even higher.

categories: very low (below CNY 10,000) low (CNY 10,000-20,000), medium (CNY 20,000-50,000) and high (above CNY 50,000)[17]. I expect income to have a positive impact on contact, because children with higher incomes can more easily bear the cost of frequent visits and calls to the parental home. This is particularly relevant in China, where travel (and, to a lesser extent, phone calls) involve substantial costs. Marital status was measured using a dummy variable comparing married children to siblings that were never married, widowed or divorced at the time of the survey. Married children generally start an independent household with their spouse, and are thus less likely to coreside with parents (see Table 17). Finally, the variable *grandchild* indicates whether the child had one or more children under the age of 16. Grandparents are the main provider of childcare in China, since both parents generally work full-time and public childcare facilities are rare (Cong & Silverstein, 2012a). Couples with underage children may therefore choose to live with or near the grandparents, although it is also common for rural-to-urban migrants to leave their children in the care of grandparents. In both cases, the provision of grandchild care is likely to entail more frequent interaction between grandparents and their adult children.

Analytical strategy

The CHARLS data contains detailed measures of spatial proximity and contact between sampled parents and each of their adult children. I exploit this unique feature by estimating family-fixed effect (FFE) models, in which coresidence, proximity and contact are evaluated as a function of differences between siblings (Wooldridge, 2008). The coefficient of education, for example, reflects the predicted difference in the outcome variable between two siblings, one of whom has received one more unit of education than the other. For binary outcomes, such as coresidence, this within-family approach takes the form of a conditional logit model.

Relative to models that look at isolated child-parent dyads, FFE models have a number of advantages. First, FFE estimates cannot be confounded by unobserved factors as long as they shared by siblings, such as the environment they grew up in or the characteristics of their parents. These unobserved confounders might otherwise bias

[17] The conversion rate to US dollar at the time of the survey was approximately 10:1

the estimated relationship between the variables of interest. Second, the within-family approach is particularly well suited to the corporate group model of family behaviour, in which siblings negotiate a division of labour in family responsibilities that is aligned with their respective preferences and constraints (Silverstein et al., 2008). It has often been mentioned that under such conditions the behaviour of individual child-parent dyads should be assessed relative to that of the sibling-parent dyads (Konrad et al., 2002; Leopold & Raab, 2013; van Gaalen, Dykstra, & Flap, 2008; Zimmer et al., 2008). Due to data restrictions, however, such a within-family perspective is not always applied in practice.

A limitation of FFE models is that they cannot assess the impact of parent-level predictors, or take into account families with only one child. Moreover, in order to produce precise estimates, FFE models require substantial between-sibling variation on both the independent and the dependent variables. The within-family percentages and standard deviations, which are displayed in the third column of Table 17, indicate that there was considerable variation within the sampled families.

RESULTS

Figure 10 illustrates the location of children relative to their parents for three different education levels, by age. It shows that, in spite of China's staggering number of internal migrants, most children continue to live near the parental home. In this respect China is similar to Western countries such as the US (Compton & Pollak, 2015) and the UK (Chan & Ermisch, 2015b). Coresidence strongly declines with age, and the large majority of middle-aged children live in separate households[18].

[18] Please note that the graph refers to natal parents only: it is likely that some of the married children, especially daughters, coreside with their spouses' parents.

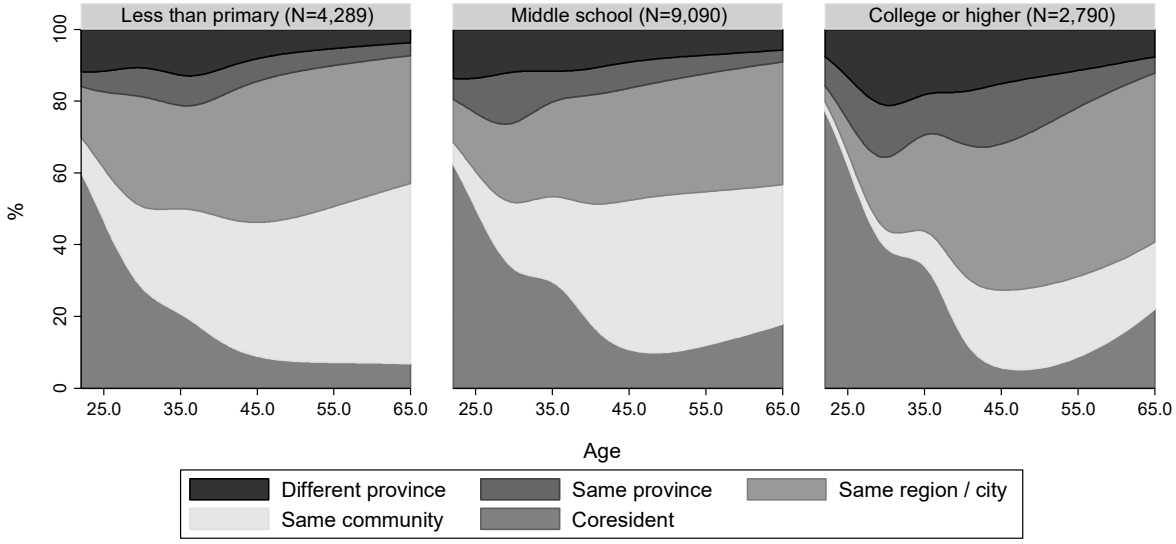

Figure 10. Spatial proximity children, by education level and age.

Source: China Health and Retirement Longitudinal Study, Wave 1 (2010-11). Stacked plots using restricted cubic spline smoothing of proportions. Education categories "Primary school" and "High school" omitted.

The spatial distribution of children across age ranges is relatively similar for the first two education categories, with about half of all children at a given age living in the same community or coresiding, and most others living in the same region or city. College-educated children on the other hand are less likely to live in the same community and more likely to live in a different province. Even for this last category however, 'migrant' children (those living in a different region or province) constitute a minority.

Table 18 presents the FFE (conditional logit) results for coresiding with parents. Education appears to have little impact on the coresidence decision. Only college-educated children are somewhat less likely to coreside with parents relative to their less-educated siblings, but this effect becomes insignificant when controlling for income. Income itself has a highly negative effect on coresidence, which indicates that sharing a household with parents is at least partially needs-based (Hypothesis 1). It may also reflect an arrangement in which wealthy sons pay their less fortunate siblings to take on family responsibilities (Lee et al., 1994; Xie & Zhu, 2009).

Table 18**:** *Family fixed-effects logistic regression models of coresidence with parent(s) on children's characteristics (Odds Ratios)*

	Coresidence	
Education (ref: less than primary)		
Primary school	0.93	0.97
Junior high	0.96	1.04
Senior high	0.95	1.06
College or higher	0.65*	0.82
Son	14.82***	14.78***
Married	0.19***	0.22***
Grandchild <16	1.23**	1.22**
Age	0.80***	0.80***
Age * Age	1.00***	1.00***
Income (ref: very low)		
Low		0.67***
Medium		0.54***
High		0.39***
N (children)	10319	10319
N (families)	3101	3101
Pseudo R-squared	0.42	0.43

Note: * p < 0.05, ** p < 0.01, *** p < 0.001. Robust standard errors not shown.

Table 19 presents the FFE models for distance, face-to-face contact and phone contact in the sample of non-coresident children. The intra-class correlation coefficient (ICC) can be interpreted as the extent to which proximity and contact were correlated amongst siblings. A high ICC could either reflect a positive interaction between one child's outcomes and those of his or her siblings (enhancement), or the impact of shared family characteristics, which affect all siblings equally (Deane, Spitze, Ward, & Zhuo, 2015). The results indicate that distance (ICC = 0.32) and face-to-face contact (ICC = 0.26) were moderately correlated amongst siblings, while phone contact was rather strongly correlated (ICC = 0.55).

Table 19**:** *Family fixed-effects regression models of distance, face-to-face contact and phone contact on children's characteristics (non-coresident children only)*

	Distance	Face-to-face		Phone	
	M1	*M2a*	*M2b*	*M3a*	*M3b*
Education (ref: less than primary)					
Primary school	0.01	-0.01	-0.02	0.17*	0.18**
Junior high school	0.10**	-0.22*	-0.11	0.35***	0.35***
Senior high school	0.18***	-0.27*	-0.03	0.53***	0.49***
College or higher	0.47***	-0.78***	-0.06	0.75***	0.64***
Son	-0.29***	0.69***	0.22***	-0.49***	-0.30***
Married	-0.28***	0.60***	0.20*	0.06	0.10
Grandchild <16	-0.01	0.13*	0.11*	0.12*	0.12*
Age	-0.04***	0.09***	0.03	-0.02	-0.01
Age * Age	0.00**	-0.00**	-0.00	0.00	0.00
Income (ref: very low)					
Low	0.19***	-0.35***	-0.09	0.17**	0.13*
Medium	0.37***	-0.71***	-0.20**	0.28***	0.20**
High	0.66***	-1.35***	-0.49***	0.31***	0.19*
Location (ref: adjacent building)					
Same community			-0.68***		0.26*
Same region / city			-2.46***		0.91***
Same province			-4.05***		0.76***
Different province			-4.88***		0.94***
Abroad			-6.32***		0.78
Constant	6.28***	2.51***	6.70***	5.14***	4.13***
N (children)	18020	17159	17159	16672	16672
N (families)	7218	7081	7081	6934	6934
R-squared (within)	0.07	0.05	0.35	0.03	0.05
ICC	0.32	0.30	0.26	0.54	0.55

Note: * p < 0.05, ** p < 0.01, *** p < 0.001. Robust standard errors not shown. ICC = Intra-class Correlation Coefficient, based on a random-effects model

As expected, education was related to an increase in geographic distance to the parental home (Hypothesis 2). College-educated children in particular were likely to live further away from parents (.47 additional units on a scale of 1-6). Sons and married children on the other hand lived closer to parents, which is likely to reflect patrilocal marriage customs. Income is also positively related to distance, with very low-income children living closest to parents. The direction of the effect may be reversed here, though, because better earnings opportunities are one of the main reasons to migrate (Y. Liu & Shen, 2016).

Models 2 and 3 relate to sibling differences in face-to-face and phone contact with parents. As suggested by the modified extended family perspective, face-to-face contact decreases steadily with distance while phone contact increases. The indirect effect of education can be assessed by comparing the education coefficients before and after controlling for distance (Kalmijn, 2006). This approach builds on the idea that education leads to higher geographic mobility regardless of preferences for contact. If this is the case, we would expect the negative impact of education on face-to-face contact to decrease or even disappear after controlling for distance. Table 3 shows that this was indeed the case: the initial negative effect is strongly reduced when location is added to the model. For phone contact, however, the initial positive effect largely remains when location is taken into account. This suggests a positive effect of education on preferences for phone contact[19]. For face-to-face contact we observe neither a negative 'value change' nor a positive 'reciprocity' effect: after controlling for distance children are equally likely to visit their parents, regardless of education level.

Apart from education and distance, a number of other factors affect intergenerational contact frequency. Income level, for example, has a negative impact on face-to-face contact, while marriage and the presence of young grandchildren generally lead to more frequent contact. Finally, it can be observed that daughters are less likely to visit, but more likely to call their parents than sons (for a more detailed discussion of gender differences in contact, see Chapter 4).

[19] An alternative explanation is that education increases knowledge of and familiarity with the use of modern communication devices. As indicated before, however, the use of mobile phones is so widespread in China that I assume this aspect to be of little importance.

DISCUSSION

Educational expansion, mass internal migration and the decline of the multigenerational household are three of the major elements of China's socio-demographic transformation. In this study I analysed the relationships between these phenomena and their implications for intergenerational solidarity. Contrary to most of the existing literature, I looked at solidarity from the child's rather than the parents' perspective. I used a unique dataset that contains information on multiple children from the same family, thus providing a more rigorous test of the effect of education on coresidence, proximity and social contact.

The findings highlight the need to distinguish between the spatial and social dimensions of intergenerational solidarity. It is indisputable that the geographic distance between parents and children has increased in China, even though most children continue to live in close proximity to parents. Education plays an important role in this process, because it provides access to more lucrative and attractive jobs outside the region of origin. Although this makes frequent family visits less likely, I found no evidence of an educational effect on face-to-face contact after controlling for distance.

A second finding is that educated children were significantly more likely to stay in touch with their parents by phone, in line with the modified extended family model. Litwak & Kulis (1987) suggested that when children live far away, phone contact can be a functional equivalent to face-to-face contact when it comes to certain forms of intergenerational support, such as the provision of companionship and advice. The introduction of mobile phones in particular has reduced the importance of place and proximity in family relationships (Srivastava, 2005). Families can thus enjoy the economic benefits of migration whilst maintaining the close-knit family ties characteristic for China's Confucian family system. The nature of mobile communication and its consequences for parent-child relationships, particularly in spatially dispersed families, is an interesting and largely unexplored research topic.

The findings are in line with the corporate group model of family behaviour, in which siblings negotiate a division of labour that maximizes overall family well-being given their respective endowments and opportunities (Silverstein et al., 2008). In many cases this would involve less educated children staying behind, possibly to farm family land and take care of parents, while those with higher educational credentials migrate and send money (Fan & Wang, 2002).

A limitation of the present study is that it cannot fully capture the dynamic nature of intergenerational proximity and social support. Children's residential decisions are responsive to their own as well as their parents' needs, and migration is often temporary (Chen, 2005; Fan & Wang, 2002). Longitudinal analysis is needed to disentangle the relationship between individual life courses and macro-social trends. Moreover, the within-family approach does not take into account single-child families, which constitute an increasing share of (urban) China's demographic structure. Since these children have no siblings to share their filial duties with, geographic mobility may involve a stronger trade-off between individual and parental interests. Future analyses could also focus on (differences in) children's filial norms and the quality of their relationship with parents as determinants of (non-)migration and social support.

Chapter 6: Conclusion

In this concluding chapter, I discuss the main themes and patterns identified in the empirical chapters, relate them to the overall theoretical framework, and discuss their implications for old age security in China.

I started this dissertation by discussing the ancient Confucian concept of filial piety, which constitutes the normative framework for the traditional Chinese family model. I then discussed a number of profound social, economic, demographic and cultural changes that have challenged this model over the past decades. The speed and magnitude of these changes have raised justifiable concerns about the continued role of the family as a provider of social, economic and psychological comfort, particularly for its elderly members. A number of indicators seem to corroborate these concerns. Coresidence rates have declined rapidly, depression rates among the elderly are high and the power balance in families has shifted towards the younger generation. Moreover, the Chinese population continues to age at a rapid pace, eroding the ratio of potential providers to recipients of support. News media reinforce the narrative of an impending crisis with alarming stories about China's ageing population. Against this background, I assessed the current state of intergenerational solidarity in China, focusing in particular on its structural, associational and functional aspects.

Overall, the findings demonstrate the resilience and adaptability of the intergenerational support system in the face of these widespread socio-economic and demographic challenges. Most children continue to provide functional and social support to parents, even if they live in at a large distance. Many contemporary Chinese families can be therefore be described as modified or networked extended families, which maintain close relationships in spite of increasing geographic distance (Litwak, 1960).

Families have adapted to structural change in various ways. One of the most striking adaptations is the increasing importance of daughters as providers of intergenerational support. Chapter 3 showed that daughters are just as likely as sons

to provide economic support to parents, which runs counter to traditional practices. Because the strength of parent-daughter ties increases with education (Chapter 4), educational expansion will continue to support this trend. It is likely that the strengthening of parent-daughter ties will, in time, reduce the number of sex-selective abortions and therewith the problem of 'excess men'[20]. It may also impose new burdens on daughters, however, who often have to manage multiple gender-specific expectations resulting from their roles as mothers, daughters, daughters-in-law and full-time workers.

A second adaptation is the increased reliance on spousal caregiving. Study 1 demonstrated that the spouse is typically the main caregiver for functionally impaired elders, even if they live with or close to adult children. By relying on each other for support, married couples can reduce their dependence on children. The downside of this arrangement is an increased vulnerability to the death of a spouse.

A third adaptation is the provision of economic and instrumental support to children. As women increasingly participate in the (formal) labour market, grandparents' support with household tasks and childcare is highly valued. Study 2 shows that parents who provide grandchild care receive much more economic support from children. The findings thus support Croll's (2006) assertion that the basis of intergenerational support has shifted from unconditional norms of obligation to mutual reciprocity.

Finally, a fourth family adaptation is the out-migration of one or more children. Particularly for rural families, the temporary or permanent migration of one or more household members can be an important strategy to maximize income and security (Fan, 2008; Giles & Mu, 2007). Contrary to what is commonly believed, it is often the more highly educated who migrate to take advantage of better employment opportunities elsewhere (Chapter 5). Children's migration is a mixed blessing for older parents. On the one hand, Chapter 3 demonstrates migrant children provide more and

[20] The recent relaxation of the one child policy may also play a role in this, see: http://www.bbc.com/news/world-asia-34665539

higher economic transfers. On the other hand, the physical absence of children reduces opportunities for face-to-face contact (Chapter 4) and caregiving (Chapter 2).

Although each of these adaptations violates the traditional dictates of filial piety in one way or another, they can be considered a rational adaptation to the social, economic and normative climate prevailing in contemporary China. Instead of being left behind by the changing times, parents have actively anticipated structural change "by devising adjustment strategies that foster new arrangements, which, in effect, re-create the cultural conditions of intergenerational support" (Hashimoto, 1993, p. 4).

Although the findings presented in this dissertation thus dispel the notion of an unfolding 'ageing crisis' and a generation of elders 'left behind' by their offspring, they must be qualified in a number of ways.

First, population ageing is still in its early stages, and both the average lifespan and the relative share of older people in the population will continue to increase in the upcoming decades. Parents who are now approaching retirement age typically have only one or two children, and living with or near them may not always be an option.

Moreover, the capability to adapt is not equally distributed, and the impact of China's transformation on its older population is often heterogeneous. As Ikels (2006) remarked "in some domains older people will benefit, while in others they may lose, and some older people will gain (or lose) more than others" (p. 388). The empirical analysis presented in this study can help to identify groups of parents that are particularly vulnerable to structural change.

First among them are widowed elders. Because of their longer life expectancy, the majority of this group consists of women. Widowed fathers, however, appear to be at a particular disadvantage in terms of caregiving, financial support and social contact with non-coresident offspring. The kin-keeper hypothesis suggests that married fathers benefit from their spouses' facilitation of family relationships, and may struggle to maintain these in the spouse's absence (Lye, 1996). Widowed fathers' failure to maintain close emotional ties with their adult children is particularly problematic when support depends on feelings of mutual affection rather than on norms of obligation.

A second vulnerable group are poor elders and those with physical disabilities, particularly in rural areas. Respondents who rated their living standard as (relatively) poor had less contact with children (Chapter 3) and were more likely to lack a caregiver (Chapter 1). In a setting where support is mainly based on reciprocity, those with a lower capacity to give tend to receive less from their children. Rising inequality in China means that parental resources have become increasingly important for children's life chances (C. Li, 2010; X. Zhou, 2014). Children from poor backgrounds may regret their parents' inability to ensure their (educational) success, and are more likely to be poor themselves and therefore have a lower capacity to give.

In general, parents who have benefited most from China's economic transformation, especially urban residents with stable (pension) incomes, are also best positioned to adapt and to maintain strong relationships with children. In other cases, particularly in isolated rural areas, the risk factors outlined above may accumulate and lead to multi-dimensional deprivation. Increased government involvement in old age security is therefore indispensable.

Public intervention is particularly necessary in rural areas, where elders have fewer resources and a lower capacity for adaptation. At the moment, social spending is heavily concentrated in urban areas and therewith serves to widen existing socio-economic inequality. Although a number of recent initiatives have sought to expand the social safety net to rural residents, benefit levels are far from adequate and full coverage is not yet achieved.

An obvious way to improve old age security in rural areas would thus be to increase the benefits of the New Rural Pension Scheme. Because intergenerational support is increasingly based on short-term reciprocity, this would also improve recipients' likelihood of receiving assistance and care from family members. Such a 'crowding in effect' has been observed in various other countries with social pension schemes (Barrientos, 2009).

The most urgent need, however, is the introduction of long term care insurance and the expansion of care infrastructure. At the moment, families have to pay the bulk of care expenditures out of pocket, and specialist care for age-related diseases such as

dementia is almost unavailable (Glass et al., 2013; M. Li, Zhang, Zhang, Zhou, & Chen, 2013). Because the institutionalization of older family members still carries a degree of stigma in (rural) China, preference should be given to home care services and community-based nursery homes, in which formal care is provided in partnership with families (J. Zhou & Walker, 2015). Such services reduce the pressure on informal caregivers and allow them to focus on other types of support, such as lighter care tasks and emotional support.

The government could also do more to support (migrant) children in caring for their parents, for example by enforcing laws on maximum working hours and annual leave policies. The relaxation of *hukou* restrictions would make it easier for rural parents to accompany their children to the cities and access social services there.

Limitations and recommendations for further research

Although the empirical studies presented in this dissertation shed some light on previously understudied aspects of intergenerational relations and old age security in China, they only covered a small share of this vast subject.

First, due to data limitations, it was not possible to study the affectual, normative and consensual aspects of intergenerational solidarity. Although subjective values and attitudes are notoriously hard to grasp in quantitative research, it would be recommendable to include measures of filial attitudes, intergenerational conflicts and perceived relationship quality into future waves of CHARLS.

Second, because my analyses were based on cross-sectional data, they could not fully capture the dynamic nature of intergenerational solidarity and exchange. Various studies have shown that living arrangements are highly fluid and that migration is often temporary or seasonal (Fan, 2009; Korinek et al., 2011). Solidarity is often activated only when it is needed, for example when parents become widowed or physically impaired (Riley, 1983). As further waves of CHARLS and other surveys, such as the China Family Panel Studies (CFPS) become available, it will be possible to study how intergenerational solidarity develops over the life course.

Third, more research is needed on conflicts and ambivalence related to the provision of intergenerational support. For example, parents may experience guilt for relying on their child(ren) for various kinds of support, particularly when children have demanding full-time jobs and families of their own. From the children's perspective, conflicts and anxiety surrounding (expectations for) parental support and its distribution among siblings are an important topic that will become increasingly prominent in the upcoming years.

Another topic that has received little attention is solidarity between grandparents and adult grandchildren. Increased longevity means that many older Chinese have one or more adult grandchildren, who constitute a potentially important source of support. Chinese grandparents play an important role in their grandchildren's lives, and are often the main caregiver in childhood (Chen et al., 2011; Cong & Silverstein, 2012a; Ko & Hank, 2013). It is likely that this results in lasting ties as grandchildren reach adulthood.

Finally, a group that was not considered in this dissertation are childless elders. CHARLS estimates suggest that around 3.4% of Chinese aged 60 and older have no living children. Because of the continued importance of offspring as a source of material and social support, childless elders may face particular difficulties that deserve further research.

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